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JOURNAL OF EDUCATIONAL RESEARCH

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JOURNAL *of* EDUCATIONAL RESEARCH

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NEW STANDARDS IN ARITHMETIC: A CONTROLLED EXPERIMENT IN SUPERVISION

GUY M. WILSON
Boston University

THIS study which continued through three years, involved thirty-three teachers and over one-thousand children in the supervisory district of Miss Emma Greenwood, primary supervisor, Lawrence, Mass. The purpose of the experiment was to test out the following questions raised by the chapters on arithmetic in the Third and Fourth Yearbooks, Department of Superintendence, 1925 and 1926.

(1) Should formal drill be replaced by informal informational type of arithmetic in grades one and two?

(2) If the program for grade three is simplified as suggested in the 4th Yearbook will it be possible to approach letter perfect results in addition and subtraction by the close of the third year?

The results of this experiment are such as to give much encouragement if not actual affirmative answers to the questions set for study.

The limitations of the study should be noted. One evident limitation was the desire of the teachers concerned "to cover the course of study," thus, in spite of resolutions to the contrary, much that was traditional was carried along as "required" work. A second limitation was the necessity of using only regular teachers, many of whom had crowded rooms, and who carried at the same time all of the regular work devolving upon teachers and supervisors. From the standpoint of the experiment, however, this should be noted as an advantage rather than a disadvantage, as it is the common condition under which school work must always be done.

Informational Arithmetic, Grades One and Two.—The purpose of the new type of work in these grades is to build up number concepts, to extend number experience, and in general, to build a basis for understanding and thinking in number situations. There should be no effort

on memorization of facts; there should be no pressure, no annoying check-ups. The effort should be frankly made to eliminate all formal drill and to use the number period in carrying on with the new type of work. This plan rests directly upon Dewey's conception of experience as the proper basis of learning.

In the matter of extending experiences, the children in this experiment were encouraged to actually gather information and become intelligent as to the use of numbers, and they were also put into situations which required them to do these things in order to participate in the activities underway. In every first-grade room there was a simple organization of some kind of a store, a five and ten cent store, a grocery store, a toy shop, or a flower shop. Although the situation was simple, it was as near like the regular store as possible. Prices had to be right. The particular kind of store depended upon pupil interest and teacher leadership. When this type of work got underway, children were much keener to go with mother on shopping trips. They used every opportunity to understand the details of shopping in order to be able to participate in their store at school.

In the second grade more stores were organized. Throughout all of this work of organizing play stores, the utmost effort was made to make it real. In many cases pictures or empty cartons were used. In some of the stores there were real flowers as well as paper flowers. One enterprising pupil rescued an old broom from a rubbish pile and brought it to school to sell in his store. The broom was cleaned, a paper put neatly around it, and then hung in the store ready for sale. In equipping the flower store the children used not only paper flowers drawn by them, cut-outs from magazines, and occasionally real flowers, but another very fine source was discovered in mother's old hats. The prices were fixed according to actual market prices, and often real discussions ensued among the children when it came to bargaining for these articles.

The greatest competitors of the store in this informational arithmetic were the games. Not so-called games consisting of "number races" in which addition has to be done, but actual games such as Ten Pins, Ring it, etc.

In games of this sort no ulterior purpose was stressed. If the child played Ten Pins, Parchessi, Ring It, Target Gun, or Japanese Base Ball, the purpose was to *win the game*, not to worry about numbers. To be sure, it became necessary to combine numbers in order to know the score, but this was a part of the game and for any child who did not know the

combinations, all that was necessary was to look up at a table which showed every possible combination.

The Results for Grade Two. At the end of the second year many of the teachers were quite concerned, in fact, almost frightened. They knew that they were soon to send their children to third grade teachers who would expect that addition and subtraction number facts had been mastered.

Under these circumstances, Miss Greenwood had the happy thought of giving tests to cover the 100 first decade facts in addition. It was agreed to give the tests without any preliminary review, in order to discover what mastery of facts had taken place. It was not expected that the pupils would do particularly well. At this point, however, there was a surprise in store for the teachers. The results are shown in Table I.

City L is Lawrence. In this particular test there were 475 pupils. At about the same time a graduate student gave these same tests in another city, City B, in which formal drill was required in grades one and two. Results are shown for City B in line 2 of Table I. In line 3 are shown results from City R for third grade pupils. This is another city in which formal drill work was the rule in grades one and two.

TABLE I

FORMAL VS. INFORMAL ARITHMETIC IN GRADES 1 AND 2. TESTS 3A AND 3B (WILSON) AT CLOSE OF 2ND GRADE. CITY B, FORMAL; CITY L, INFORMAL (CITY R, FORMAL, 3RD GRADE).

Score	100	99	98	97	96	95	94–90	89–80	79–70	69–60	59–50	Q1	M	Q3
City L. Informal 475 Pupils	289	53	54	16	20	13	17	5	4	1	3	100	100	98
City B. Formal 174 Pupils	31	33	18	12	4	9	5	9	1	1	1	100	99	98
City R. Formal 154 Pupils (3d Grade)	48	31	26	9	14	6	12	7	1			100	99	96

Comparing the results it is seen that the children in City L did slightly better than similar second grade children in City B, and better also than third grade children in City R.

City R was used in this study because the children from that city were of the same general foreign type as in City L. In City B the school tested was in one of the better American neighborhoods. It is clear,

therefore, that in City L there were no advantages except the advantages that might result from the better plan of teaching arithmetic. The parents of these children were factory workers in a typical factory city. Had the results in City L been poorer than in City B or City R (third grade) it would not have given any particular concern, since the aim was not the mastery of facts. But it does appear from these data that the simple first decade facts were better mastered, and there is no doubt that they were better understood.

The Third Year Program.—Informational work was continued for at least one day each week throughout the third year. Stores, games, opportunities for extension of experience, sensible extension of concepts when opportunities offered,—all of these means were used as a basis of understanding and a means of motivation. This work for the development of concepts and extension of experience is fundamental in all grades; it represents the new development of informational units.[1]

On the other four days of the week there was a definite systematic attack upon drill in addition and subtraction,—addition for the first half of the year, with some review continued to the end of the year; subtraction for the last half of the year with subtraction as occasion offered throughout the first half. In other words, the two processes were not entirely separated, but the major emphasis during the first half was upon addition, during the second half upon subtraction.

It was realized that the children had gained understanding of simple numbers. Through games, stores, and experiences, they had developed a tremendous motivation for number work. The first essentials for successful drill, therefore, were fully met, namely, understanding and motivation. It was an easy matter, therefore, to keep drill behind meaning. Since the search for an adequate available drill service was not successful, it was finally decided to construct such a drill service. The basic principles for its construction were somewhat as follows:

(1) Every needed addition fact should be noted.
(2) The facts should be grouped into sizable units.
(3) The work on any group of facts should extend through all of the process difficulties.
(4) Complete mastery of facts and process steps was to be the aim with each group.

[1] Wilson, Guy M. *What Arithmetic Shall We Teach?* (Houghton, Mifflin Co., 1926), pp. 86-90.

(5) Time was to be economized by regular inventory checks, thus insuring that the efforts of children were expended upon things not learned instead of things already learned.
(6) Provision must be made for as much individual instruction as seemed necessary in order to have each child work upon his own needs.

A drill service meeting the above and some other requirements was finally completed by the author, made available to Miss Greenwood, and duplicated during the summer in order to be ready for use in the fall. The new program for third grade was brought before the teachers through the usual supervisory methods, teachers meetings, special grade meetings, notes and circulars. In general, the challenge was accepted, and the way cleared for the new plan. But it does appear, from the final report, that "covering the course of study" was kept in mind and was one of the handicaps.

The Results in Addition and Subtraction at the Close of Grade Three. —Reference to the 1916 Courtis Standards in addition shows that 60 percent accuracy was expected in grade four, 68 percent in grade five, 71 percent in grade six, 72 percent in grade 7, and 74 percent in grade eight. Extending the Courtis curve downward to include grade three it is apparent that the expectations for third grade results in addition would be something less than 60 percent. These results, however, were on the basis of the old type of work, consisting of formal drill in grades one and two, the number families and the impossible Grube procedure in grade one, and an impossible combination of almost all processes in grade three. Frequently this program was so carried out that there was no systematic teaching, no real chance for mastery of any process.

At the close of the third year of this experiment in Lawrence, the results were very different and were most gratifying. Keep in mind, however, that the entire supervisory district was included. There were more than 30 teachers and 1000 children. The results were not a class average of less than 60 percent in addition, but a class average of 97.8 percent instead. It should be noted that the test used was not the Courtis Series B. It was instead the Wilson Survey Test, Form II.

This test is not as difficult as the Courtis Series B. Instead it conforms to social usage. It represents the figuring of 90 percent of the adult population while the Courtis Series B goes much beyond common adult practice.

The complete results in May at the close of the 3rd year of the experiment are shown for Lawrence in Tables II and III. Table II shows for each room the average score and the percentage of pupils making perfect scores in addition. Table III shows the same results for subtraction. In order to make the results easily read and comparable with other studies on a percentage basis the average score is expressed in percentage, and this means the same thing as the percentage of accuracy as used by Courtis in his testing work of a few years ago.

TABLE II—ADDITION

RESULTS OF WILSON SURVEY FORM 2
LAWRENCE, MASSACHUSETTS
GRADE III, MAY RESULTS, 1034 PUPILS

Room No.	Av. Score	Percentage Pupils Perfect
1	99.4	96.9
2	99.8	96.7
3	97.8	80.6
4	99.6	97.2
5	93.4	63.2
6	98.2	86.2
7	97.8	83.3
8	95.6	61.3
9	93.0	60.0
10	97.2	78.6
11	96.2	75.6
12	98.9	81.8
13	99.0	91.4
14	100.0	100.0
15	98.6	87.5
16	100.0	100.0
17	95.0	68.8
18	95.8	75.9
19	99.8	96.9
20	99.6	96.2
21	99.4	87.9
22	99.8	96.7
23	97.8	77.8
24	99.0	88.2
25	96.8	67.6
26	96.8	73.7
27	98.6	86.7
28	99.2	93.1
29	95.9	63.3
30	97.0	75.0
31	97.0	75.0
32	100.0	100.0
33	95.6	66.6
Entire City	97.8%	82.7

TABLE III—SUBTRACTION

RESULTS OF WILSON SURVEY FORM 2
LAWRENCE, MASSACHUSETTS
GRADE III, MAY RESULTS, 1034 PUPILS

Room No.	Av. Score	Percentage Pupils Perfect
1	100.	100.
2	99.8	96.7
3	98.	86.1
4	98.6	94.4
5	91.2	57.8
6	97.6	75.9
7	95.4	63.3
8	91.6	41.9
9	86.6	36.7
10	94.2	64.3
11	95.	65.9
12	99.6	97.
13	97.4	82.9
14	99.	97.1
15	99.6	93.8
16	100.	100.
17	94.8	65.6
18	92.2	44.8
19	98.4	84.4
20	95.4	80.8
21	98.	75.8
22	99.6	96.7
23	99.2	88.9
24	91.8	64.7
25	90.8	56.8
26	95.6	73.8
27	98.6	83.3
28	98.2	89.7
29	92.4	53.3
30	88.4	43.8
31	85.2	50.
32	100.	100.
33	94.6	62.5
Entire City	95.6%	74.8

Such results as the above were never before reported, as far as the author knows. They represent a degree of efficiency on the part of third grade pupils never before demanded or expected. Eighty-two percent of these children were letter perfect in addition, 74 percent in subtraction. This means that these percentages of the children had perfect scores. There are, as shown by Tables II and III, some entire rooms with perfect

scores in each process. It will be of interest to note at least a little more of the details of securing such results.

The How of 100 percent Results.—In brief, the teachers knew the 100 primary combinations, the 300 decade combinations for column addition to 39 + 9, the 80 additional decade combinations needed for multiplication. They understood the plan of grouping the primary facts and joining with them the related upper decade facts. They understood the 10 step process procedure based upon a wide analysis of pupil difficulties as shown by an analysis of errors made in the New England Contest for the previous three years. In short, the teachers had in mind the plan of a drill service prepared with the idea of systematic procedure, regular check up, and final aim of letter perfect results. This will be made a little clearer by an analysis of the errors made by 1023 of the 3rd grade pupils who took the Wilson Addition Process Test (Test 3P), January 15. The median score at this date was 93 percent, the mode was 100 percent, the low was 47 percent. Following the test the errors of all the children were carefully checked and distributed over the ten groups in the process test, corresponding to the ten process steps. The results of this error analysis are shown in Table IV.

TABLE IV

SHOWING THE DISTRIBUTION OF ERRORS OF 1023 THIRD GRADE PUPILS ON THE WILSON ADDITION PROCESS TEST, JANUARY 15

1.	Primary combinations, no zeros, sums to 9-9	.7%
2.	Primary combinations, with zeros, sums to 9-9	.4%
3.	Short columns, unseen addends, no zeros, sums to 18	1.8%
4.	Short columns, unseen addends, with zeros, sums to 18	2.0%
5.	Two place or three place numbers with no carrying, no zeros or gaps	3.0%
6.	Two place or three place numbers without carrying but with zeros and gaps	4.0%
7.	Two or three addends, both 2 or 3 place, sum of left hand column less than 10, no zeros	7.0%
8.	Columns, carrying, gaps, zeros, sums to 39-9	31.0%
9.	Adding dollars and cents	37.0%
10.	Higher decades needed for carrying in multiplication	10.0%
		96.9%

This careful analysis of errors showed the teachers exactly where more effort was needed. Each child keeps an individual record of his errors, and this record showed him where his particular weaknesses lay. The January test emphasized one point not sufficiently noted before, namely, the need of checking.

In Subtraction Also.—The systematic attack upon subtraction began in January. The procedure was in general similar to that which had been

followed in addition. The facts were grouped; the related facts were connected with them; the process steps as revealed by an extended analysis of pupils' errors, were taught in connection with each group.

In April, shortly preceding the May check-up, the Wilson Subtraction Process Test, Test 4P, was given. The median score was 98 percent, the mode 100 percent, the low 30 percent. In other words, more than half of the 1045 third grade pupils taking the test on April 23 were at 98 percent above while a few isolated pupils trailed down to 30 percent.

TABLE V

SHOWING THE DISTRIBUTION OF 1045 THIRD GRADE PUPILS ON THE WILSON SUBTRACTION PROCESS TEST, TEST 4P, APRIL 23RD

Score	Number of Pupils	Score	Number of Pupils
100	339	76	1
99	135	75	1
98	104	74	2
97	79	73	1
96	81	72	2
95	60	71	1
94	41	70	2
93	25	69	2
92	21	67	2
91	29	63	2
90	23	60	1
89	11	58	1
88	11	57	1
87	11	55	1
86	13	54	2
85	4	51	1
84	4	50	1
83	4	47	1
82	6	44	1
81½	4	42	1
80	3	40	1
79	6	36	1
78	1	30	1

TABLE VI

SHOWING THE DISTRIBUTION OF SUBTRACTION ERRORS OF 1045 THIRD GRADE PUPILS ON APRIL 23, LAWRENCE, MASSACHUSETTS

Groups	% Errors
1. Primary facts, minuends less than ten	.2%
2. Primary facts, minuends ten to eighteen	.5%
3. Simple subtractions, without borrowing	.4%
4. Two or three place numbers, no borrowing, zero in answer	.4%
5. Two or three place numbers, no borrowing, last subtraction a zero not brought down	.7%
6. Two or three place numbers, no borrowing, zeros in subtrahend	.4%
7. Gaps, or dangling lefts, no borrowing	1.2%
8. Two or three place numbers, one-step borrowing	5.8%
9. Zero in the minuend and one-step borrowing	4.6%
10. One-step borrowing, the last subtraction a zero not brought down	4.0%
11. Gaps, or dangling lefts, with borrowing	4.9%
12. Double borrowing	10.4%
13. Zeros in the minuend and double borrowing	9.7%
14. Double borrowing, involving the figure nine in the subtrahend	10.2%
15. Vanishing lefts, and borrowing	3.1%
16. Vanishing lefts with double or triple borrowing	10.4%
17. Dollar and cents, zero difficulties, no borrowing	2.3%
18. Dollars and cents with zero difficulties and one-step borrowing	6.2%
19. Dollars and cents with double or triple borrowing, zeros, gaps, and vanishing lefts	12.0%
20. Checking answers	11.7%

The distribution for the Subtraction Process Test for April 23 is shown herewith in Table V.

Following the Subtraction Process Test the errors were analyzed for every child and summarized for all of the 1045 pupils. Table VI shows this summary for all pupils in terms of the twenty groups in the Subtraction Process Test corresponding to the twenty steps in the teaching of subtraction.

Conclusion.—This entire report is merely a brief summary. The data reported speak for themselves. They do suggest tremendous possibilities of improvement over present practice. They suggest replacing time on drill in grades one and two by a broader and more fundamental preparation for life's real problems through understanding and experience. They indicate the possibility of letter perfect results in the fundamentals for most children. These results are accompanied by a happier childhood through coöperation, understanding, and success. Arithmetic has been the tyrant of the schools. It has caused more failure and grief than any other subject in the grades, and the final results have been poor.

The results of this experiment are so strikingly in contrast with the usual results as to place the burden of proof upon those who oppose the plan of replacing formal drill with informational work in grades one and two, followed by a systematic attack for 100 percent mastery of the fundamentals beginning with grade three, as recommended in the Fourth Yearbook of the Department of Superintendence.

AN EXPERIMENT WITH HANDWRITING IN FIRST GRADE

IVA A. MERCER
New Haven Public Schools

WHICH is better for the child, the daily routine practice periods in writing or the occasional handwriting practice when there is a real need for it? This article reports a two-year study, each year being given entirely to one of these procedures. During the entire time, a diary was kept in which was recorded detailed accounts of the teaching procedures, materials used, and notes which it was thought might prove useful in interpreting the results. Samples of the children's writing were taken at regular intervals. Extensive research in recent literature on handwriting was conducted in order to solve such problems of method as:

What materials shall be used?
What, if any, mechanical aids shall be used?
What degree of arm movement shall be required?
Shall there be a rhythmic organization of writing practice?

When solutions had been found for these problems, a platform of method was drawn up and adhered to for the two years of experimentation. A list of references, giving the sources and authorities for these solutions, will be found on pages 367-368.

The procedures were evaluated in terms of the achievement made by the children in handwriting. This involved the discovery or devising of means for measuring the samples of writing which had been collected. There are numerous handwriting scales but they are not satisfactory measures of first-grade writing. Few of them give norms of achievement for first grade. First-grade writing is usually in pencil, is much larger than that of writing scales, and is of a different style. Although Freeman devised a writing scale, he thought that "the handwriting of pupils of the first grade is hardly sufficiently developed for the use of a scale."[1]

Starch's scale[2] was finally selected for the following reasons:

1. The scale was constructed on the principle of judgment of general merit or excellence of quality.

2. There is uniform text material in all samples, including the capital letters.

[1] Freeman, Frank N. "A Handwriting Scale for the Pupil," *Elementary School Journal*, XXI (June 1921), p. 755.

[2] Starch, Daniel. "A Scale for Measuring Handwriting," *School and Society*, IX (February 8, 1919), p. 188.

3. There is a continuous series of steps from 0-25.

4. There are standards of attainment in both speed and quality for the various grades.

The method of using a scale was the next problem that arose. Morton had found that: "The mere use of a scale among these 278 teachers, who were almost entirely unacquainted with a scale and its use, reduced the average error 5 percent."[3] In answer to the question "Does experience in teaching make for increased accuracy in grading handwriting either with or without a scale?", his evidence showed that "Teaching experience neither increased nor decreased, on the average, the accuracy of handwriting grading without a scale and that it actually decreases his ability to use a scale."[4]

The findings of Brooks corroborate those of Morton. He found "that if three partially trained judges rate each specimen and if the mean of their ratings of each specimen be taken as the rating of that specimen, the resulting scores will be considerably less in error than the one-judge ratings. Other data on variabilities, not given here, indicate that having three judges rate specimens reduces the error about one third. We also have data which indicate that three ratings by the same judge are more subject to error than one rating by each of three judges."[5] Farther on he says, "For measuring the achievement of groups the amount of error that comes from inadequate measurement of individuals is likely to be small enough to be negligible, providing the inadequacy is not subject to some constant bias, such as grading too high, or grading too low. The practice of having three judges rate a specimen greatly reduces the error—probably by as much as one-third."[6]

Eight first-year normal school students, because of their superior rating for the first half year's work, were selected for judges. All of the students had received one month's training in the practice schools, and they were also given five hours' training in judging first grade writing

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[3] Morton, R. L. "The Value of a Handwriting Scale to an Untrained Teacher," *Journal of Educational Research*, III (Feb. 1921), p. 134.

[4] *Ibid*, p. 133.

[5] Brooks, Fowler D. "The Accuracy and Comparative Variability of Ratings According to Three Handwriting Scales," *Educational Research Bulletin*, Ohio State University, II (May 16, 1923), pp. 148-149.

[6] Brooks, Fowler D. "The Accuracy and Comparative Variability of Ratings According to Three Handwriting Scales," *Educational Research Bulletin*, Ohio State University, II (May 16, 1923), p. 157.

Analytical charts were prepared for this training with the sentence "Spring is here." This sentence was considered satisfactory because it contained a representative group of letters:

S—a difficult capital
p—equally difficult with letter 'f'
r and s—frequently recurring and difficult letters
i—representing the i-j-u-w group
n—the m-n-v group
g—the a-d-g-q group
h—the b-h-k-l group

In order to get samples poor enough for the lowest step of the scale, kindergarten children wrote the sentence as well as the experimental group. Five specimens of handwriting were selected according to the teacher's judgment showing the following elements: spacing (between letters and between words); cursiveness (including breaks, wavering, lack of swing and tracing); letter formation; slant (uniformity and degree); and alignment (with reference to base line and proportionate height of letters).

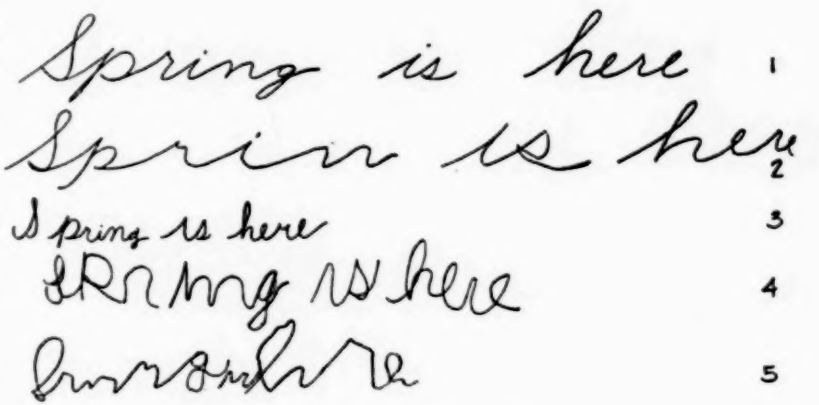

FIGURE I. SPACING

Between letters:
1. Even. A desirable spacing.
2. Letters too far apart. Too much swing.
3. Uneven. Letters crowded due to lack of swing.
4. Uneven—more so than 3.
5. Very uneven—more so than 4.

Between words:
1. Even. A desirable spacing.
2. Uneven.
3. Not sufficient.
4. Not sufficient. Worse than 3 because the writing is larger.
5. No space left between words—almost continuous.

Below these five specimens arranged in order of merit was an analysis of the chart. Figure I shows one of these charts and is illustrative of the others. The purpose and method of using the charts were explained to the students. They were then given samples to rate of the children's writing "Spring is here." The sorting method was used, by which the judges slide specimens along the scale until a writing of the same quality is found. The eight ratings were recorded and the mean determined. Each student's deviations from the mean rating were noted. Following several ratings of different specimens of this sentence the students were asked to use the same chart for rating other sentences. This, of course, increased the difficulty and caused a wide variation of scores, but after more practice the deviation was no greater for different sentences than for "Spring is here."

After training had been given in the use of all the charts and it was felt that the students were conscious of the elements of handwriting illustrated, they were divided into two sections as nearly identical in rating ability as possible. One section was supplied with Starch's scale and began rating the handwriting specimens of the children of both years. This section will be referred to as Section I. The second section of students (Section Ia) was given further training. An analysis, similar to the analysis made of the charts for slant, spacing, letter formation, cursiveness and alignment, was made of each step of the Starch scale. An indication as to why each sample was better or poorer than the ones preceding or following was suggested. When the students of Section Ia had become more familiar with the different specimens and the use of the Starch scale they began rating. Three sets of papers had been selected as being representative of the children's work for the first year. The second year's group of children were required to write this same sentence on the same date of the school year. To make the scores as reliable as possible, the six sets of papers were rated in a different order by each student.

Table I gives data concerning both groups of children. While the median chronological age of the second year's group is one month more than that of the first year's group, the median mental age is seven months lower resulting in a lower median intelligence quotient for the second year group. Three tests used by Hertzberg[1] for measuring the motor

[1] Hertzberg, Oscar E. *A Comparative Study of Different Methods of Teaching Beginners to Write*, Teachers College Contributions to Education, No. 214 (New York: Bureau of Publications, 1926), pp. 6-9.

ability of children were administered, but the tests and the scoring of them were so highly subjective that the results were not considered reliable. No difference in the writing readiness or in manual ability of the children as groups was noticed by the teacher.

Table II gives the mean scores in terms of quality, according to the Starch scale, of all the students on each set of papers for both years; also the mean score of both sections on each set of papers for both years. Student A's mean score for set 3 of the first year was 14.8. Her mean score for the year's work of the first group was 13.1. The mean score given by students of Section Ia for the first year was 12.5. A comparison of the scores with the grade norms established by Starch is shown in Table III. It appears that Section Ia considered the handwriting of the second year better than that of the first year and even slightly better than Starch's norm for the grade.

TABLE I

NUMBER OF CHILDREN PARTICIPATING IN THE EXPERIMENT: CHRONOLOGICAL AGES, MENTAL AGES, AND INTELLIGENCE QUOTIENTS

No. of children participating in the experiment			Chronological Age		Mental Age		Intelligence Quotient	
First Year	Second Year		First Year	Second Year	First Year	Second Year	First Year	Second Year
33	34	Upper quartile	6–4	6–3	7–8	7–3	125	118
		Median	6–1	6–2	7–5	6–10	117	108
		Lower quartile	5–10	6–0	6–8	5–11	113	94

TABLE II

MEAN SCORES IN TERMS OF QUALITY ACCORDING TO STARCH'S SCALE

FIRST YEAR

	Section Ia					Section I				
	Students				Mean	Students				Mean
	A	B	C	D	for group	E	F	G	H	for group
Set 1	12.1	9.6	12.5	10.5	11.3	12.5	12.1	14.2	11.7	12.8
Set 2	12.5	12.8	12.6	12.3	12.6	11.3	13.7	11.4	13.7	12.5
Set 3	14.8	13.3	13.5	12.6	13.6	11.6	14.5	12.7	12.3	12.8
	13.1	11.9	12.8	11.8	12.5	11.8	13.4	12.7	12.5	12.7

SECOND YEAR

	Students				Mean	Students				Mean
	A	B	C	D	for group	E	F	G	H	for group
Set 1	12.8	12.7	12.4	11.7	12.4	10.1	13.3	10.4	10.5	11.1
Set 2	14.0	14.5	12.1	12.2	13.2	12.0	12.2	12.1	12.0	12.8
Set 3	15.7	15.3	15.5	14.6	15.3	13.3	15.9	14.2	13.0	14.1
	13.1	14.1	13.3	12.8	13.6	11.8	13.8	12.2	11.8	12.6

TABLE III

A COMPARISON OF SCORES WITH STARCH'S GRADE NORMS

	Section Ia	Section I	Mean Rating	Starch's Grade Norm
First Year	12.5	12.7	12.6	13
Second Year	13.6	12.6	13.1	13

According to the scores of Section I there is only one-tenth of a point's difference in the writing of the two groups, and the result of both years falls slightly below the norm. The means of the two sections also show slight variations from the norm.

An analysis of the students' ratings was made to determine their accuracy. Table IV shows the number of points of variation per student from the mean of the total number of points accorded a set of papers by a section. The mean of the four student ratings for each paper was found. These means were totaled. The total of the mean ratings for set 1, first year was 372.9. Student A's total of ratings for this set of papers was 401. She is credited with a deviation of 28.1. The plus sign indicates a variation above the mean, the minus sign below. Table V gives the mean variation per student from the mean of the ratings of all the students for each paper rated. It will be noticed that the variation is higher for Section I. The mean variation per section for each paper rated was found to be .61 for Section Ia and 1.0 for Section I.

Table VI shows that in the cases of certain students there was a constant bias, students A and F grading too high and students D, E, and

TABLE IV

THE POINT VARIATION OF STUDENTS FROM THE MEAN RATING OF THE SECTION

	Section Ia				Section I			
First Year	Students A	B	C	D	Students E	F	G	H
Set 1	28.1+	53.9—	40.1+	25.9—	9.8—	23.8—	47.2+	43.8—
Set 2	4.1—	7.9+	.1—	10.1—	39.3—	39.7+	36.3—	38.7+
Set 3	39.0+	10.0—	1.0—	30.0—	36.8—	57.2+	1.8—	15.8—
Second Year								
Set 1	13.3+	9.3+	1.3+	24.7—	33.2—	73.8+	25.2—	19.2—
Set 2	28.9+	43.9+	37.1—	32.1—	29.2—	77.8+	23.2—	26.2—
Set 3	14.9+	.9+	7.9+	21.1—	26.1—	60.9+	4.9+	36.1—
	128.3	125.9	87.5	143.9	174.4	333.2	138.6	170.8

TABLE V

THE MEAN POINT VARIATION OF EACH STUDENT FOR ALL THE PAPERS RATED

	Section Ia				Section I				
Students	A	B	C	D	E	F	G	H	Mean variation of all students
	.64	.63	.43	.72	.87	1.67	.69	.85	.81

TABLE VI

NUMBER OF POINTS BIAS PER STUDENT

	Section Ia				Section I			
	A	B	C	D	E	F	G	H
+	124.2	62.0	49.3	0	0	309.4	52.1	38.7
—	4.1	63.9	38.2	143.9	174.4	23.8	86.5	132.1

H grading too low. The benefit of training in the use of the scale again shows itself in the fact that there was less constant bias in Section Ia which had training in the use of the Starch scale. Considering only the scores of the three students B, C, and G who showed the least evidence of bias the average achievement for the first year was a quality of 12.4 and for the second year, of 13.2. These qualities differ slightly from those in Table III but are probably more accurate.

Since methods and materials were kept uniform during both years of the experiment it was assumed that any difference in achievement would be partly due, at least, to the difference in the amount and distribution of practice of the two procedures. The results showed that the second year's group, having a lower median intelligence quotient and approximately forty minutes a week less writing practice than the first year's group achieved the higher mean quality in handwriting. The conclusion was drawn that practice in handwriting in first grade may be confined to instances where there is a real need for writing with the expectation of a resultant quality equal to, or surpassing that secured by daily writing periods.

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A COMPARATIVE STUDY OF THE VOCABULARIES OF TWELVE BEGINNING BOOKS IN READING

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DURING recent years considerable effort has been centered upon the study of the most common words found in children's speech and reading. These investigations have resulted in the compilation of several vocabulary lists. But little, so far, has been done to check beginning books in reading to determine if these vocabulary lists are used in the preparation of children's reading material. This study was undertaken to compare the vocabularies of the beginning books of twelve sets of recently published readers to determine to what extent the lists had influenced the vocabularies of beginning books, and to compare the findings of this study with a similar study made a few years ago.[1] Beginning books of the following readers were studied:

1. Frank N. Freeman, Grace E. Storm, Eleanor M. Johnson, and W. C. French, *Child Story Readers.* Primer, Chicago: Lyons and Carnahan, 1927.
2. Mary E. Pennell and Alice M. Cusack. *Friends,* A Primer. Boston: Ginn and Company, 1929.
3. John M. Manly and Sarah E. Griswold. *Good Reading,* Primer. New York: Charles Scribner's Sons, 1926.
4. Herman Dressel, M. Madeline Veverka, and May Robbins. *The Laidlaw Readers,* Primer, Chicago: Laidlaw Brothers, 1928.
5. Livia Youngquist and Carleton Washburne. *My Reading Book,* Rand McNally and Company, 1925, edition of 1927.
6. Anna D. Cordts. *The New Path to Reading,* Primer, Boston: Ginn and Company, 1929.
7. Clara Murray. *The New Wide Awake Junior,* An Easy Primer, Boston: Little, Brown and Company, 1929.
8. Sidney G. Firman and Ethel M. Gehres. *The New Winston Primer,* Philadelphia: John C. Winston Company, 1928.
9. Bessie B. Coleman, Willis L. Uhl, and James F. Hosic. *The Pathway to Reading,* Primer, New York: Silver, Burdett and Company, 1925.
10. Clara B. Baker and Edna D. Baker. *The Pet Pony and Other Stories,* Primer, Indianapolis: The Bobbs-Merrill Company, 1928.
11. Eva A. Smedley and Martha C. Olsen. *The Smedley and Olsen New Primer,* Chicago: Hall and McCreary Company, 1926.
12. Marjorie Hardy. *Wag and Puff,* A Primer, Chicago: Wheeler Publishing Company, 1926.

[1] Selke, Erich and Selke, George A. "A Study of the Vocabularies of Beginning Books in Twelve Reading Methods," *Elementary School Journal,* XXII (June, 1922), pp. 745-749.

No attempt to evaluate or compare the method of presentation of beginning reading advocated by any book has been made in this study. Each word found in each book was listed and its frequency determined. Words having the letter *s* as a suffix were counted with the root form. For example, jump and jumps were counted as one word and listed under jump. When other suffixes were added to the root, the words were listed separately, as jumping and jumped which were counted as two separate words. In a few instances, two distinct words, usually proper nouns,

TABLE I

NUMBER AND FREQUENCY OF DIFFERENT WORDS INTRODUCED IN EACH OF THE TWELVE BEGINNING READERS

Book	Frequency					Number of Different words
	1	2 to 5	6 to 9	10 to 19	20 or more	
I	57	168	63	53	61	402
II	8	66	48	77	89	288
III	7	50	61	87	75	280
IV	33	62	47	71	107	320
V	148	169	86	90	101	594
VI	19	54	39	56	95	263
VII	32	67	37	55	84	275
VIII	24	116	71	78	73	362
IX	42	84	58	50	54	288
X	7	18	23	27	96	171
XI	20	60	35	50	47	212
XII	11	97	42	58	63	271

TABLE II

NUMBER OF WORDS COMMON TO ANY TWO OF THE BEGINNING READERS

Book	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
I	...	185	174	192	254	136	181	193	177	136	122	171
II	...	...	157	163	217	111	155	161	146	123	103	148
III	...	...	...	173	195	112	168	159	142	140	106	146
IV	...	...	...	...	216	126	170	177	152	129	113	148
V	...	...	...	...	...	165	206	220	195	147	139	197
VI	...	...	...	...	...	...	122	125	122	100	90	111
VII	...	...	...	...	...	...	...	158	150	126	107	148
VIII	...	...	...	...	...	...	...	...	156	129	115	146
IX	...	...	...	...	...	...	...	...	...	116	102	131
X	...	...	...	...	...	...	...	...	...	...	80	111
XI	...	...	...	...	...	...	...	...	...	...	...	92
XII	...	...	...	...	...	...	...	...	...	...	...	...
Number of Different Words	402	288	280	320	594	263	275	362	288	171	212	271

though they might be separated, as Blue Jay, were listed as one word when it was apparent that the words would be taught as one word. Hyphenated words were counted as two separate words. Because of the method employed in this study, the total number of words listed and credited to any book may differ with the number stated in the manual or textbook. The books are not listed in the tables in the order shown in the foregoing list.

A total of 1207 different words were found in the twelve beginning books and the number of different words introduced in any one book ranged from 171 to 594 as shown in Table I. This table indicates a very noticeable trend to introduce fewer words in beginning books than formerly. Ten of the books have less than 400 words and eight of these have less than 300, whereas in 1922 only six of the books studied had

TABLE III

PERCENTAGE OF WORDS COMMON TO ANY TWO OF THE BEGINNING READERS

Book	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
G												
I	...	37	34	36	34	25	36	34	35	31	27	34
II	...	...	38	37	33	25	38	33	34	37	26	36
III	...	...	...	41	29	26	43	33	33	45	27	36
IV	...	...	...	...	31	28	40	35	33	36	27	33
V	...	...	...	...	...	24	31	30	29	24	21	29
VI	...	...	...	...	...	...	29	25	28	30	23	26
VII	...	...	...	...	...	...	...	33	36	39	28	37
VIII	...	...	...	...	...	...	...	...	32	32	25	30
IX	...	...	...	...	...	...	...	...	...	34	26	31
X	...	...	...	...	...	...	...	...	...	...	26	34
XI	...	...	...	...	...	...	...	...	...	...	...	24
XII	...	...	...	...	...	...	...	...	...	...	...	...

TABLE IV

TOTAL NUMBER OF DIFFERENT WORDS PRESENTED IN ANY TWO READERS

Book	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
I	...	505	508	530	742	539	496	571	513	437	492	502
II	...	...	411	445	665	440	408	489	430	336	397	411
III	...	...	...	427	679	431	387	483	426	311	386	405
IV	...	...	...	...	698	457	425	505	456	362	419	443
V	...	...	...	...	...	692	663	736	687	618	667	668
VI	...	...	...	...	...	...	416	500	429	334	385	423
VII	...	...	...	...	...	...	...	479	413	320	380	398
VIII	...	...	...	...	...	...	...	...	494	404	459	487
IX	...	...	...	...	...	...	...	...	...	343	398	428
X	...	...	...	...	...	...	...	...	...	...	303	331
XI	...	...	...	...	...	...	...	...	...	...	...	391
XII	...	...	...	...	...	...	...	...	...	...	...	...

less than 400 words, and only two of these less than 300 words. The total number of different words is a decrease of twenty-six percent from the total found in 1922.

While it has not been scientifically determined how often a word must be repeated to insure fixation, Reed[2] estimated the number of repetitions to be from twenty-five to thirty-five in Grades I and II. Yet one book has seventy-one percent of the total number of words occurring less than ten times; two others from sixty to sixty-nine percent; three from fifty to fifty-nine percent and six less than fifty percent. This is a decided improvement over the results found to be true a few years ago. Then only one book had less than fifty percent of the words occurring less than ten times and four more then seventy percent.

Out of the 1207 different words found in this study, 582 were found in only one book. This represents forty-eight percent of the total number of words and is approximately the same percentage found in 1922. Fifty-two words were found common to all twelve beginning books.

The study also shows the number of words common to any two books as indicated in Table II. The table should be read as follows: 185 words are common to Books I and II; 174 to Books II and III, etc. Table III gives the percentage of words common to any two books. Comparing Books I and II, we find that thirty-seven percent of the total number of different words found in the two books are common.

Table IV gives the number of different words introduced in any two books. Books I and II show that 505 different words are used; Books I and III, 508 different words. If Books I and II are used in the same school system, one as basal and the other as supplementary, 505 different words will have to be presented to the children, and many of these words are given but once in the books. While 185 words are common to the two beginning books, Books I and II, only sixty-four of these words have a frequency of ten or more times in each book.

The list of words was next checked with the Gates,[3] Thorndike,[4] and Twenty-fourth Yearbook[5] lists. In the Gates' lists, the words are mainly

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[2] Reed, Homer B. *Psychology of Elementary School Subjects.* (Boston: Ginn and Company, 1927), p. 52.

[3] Gates, Arthur I. *A Reading Vocabulary for the Primary Grades.* New York: Bureau of Publications, Teachers College, Columbia University, 1926.

[4] Thorndike, Edward L. *The Teacher's Word Book.* New York: Teachers College, Columbia University, 1921.

[5] Twenty-Fourth Yearbook of the National Society for the Study of Education, Part I. Report of the National Committee on Reading. (Bloomington, Illinois: Public School Publishing Company, 1925), pp. 186-193.

the primary forms. Since Gates and Thorndike include, except in special cases, the other forms of a word under the primary forms, such forms, when found in this study, were checked in the group in which the primary form was listed in the Gates or Thorndike lists. One hundred one primary forms of words were found in the Thorndike 1a1 list. (There are 103 words in the Thorndike 1a1 list.) Five additional words, derivatives of these primary forms, were also found among the total. Reading Table V, we find that Book I contains 312 words found in the list given in the Twenty-Fourth Yearbook; 87 in the Thorndike 1a1

TABLE V

THE NUMBER OF WORDS FOUND IN BEGINNING READERS COMMON TO THREE VOCABULARY LISTS

		Thorndike							Gates			
Book	24th Year Book	1a1	1a2	1a3	1a4	1a5	Miscellaneous	Total	1	2	3	Total
I	312	87	58	30	22	36	161	394	266	65	28	359
II	229	77	50	29	28	22	69	275	215	39	7	261
III	230	71	51	26	19	19	86	272	224	28	15	267
IV	257	71	45	23	20	21	134	314	235	47	12	294
V	421	101	86	53	50	49	239	578	342	110	53	505
VI	213	55	31	20	18	25	112	261	188	40	11	239
VII	231	78	49	29	15	20	79	270	218	27	12	257
VIII	272	78	56	37	22	27	133	353	246	59	23	328
IX	242	75	42	34	17	18	95	281	205	41	14	260
X	152	70	32	7	13	8	39	169	154	5	1	160
XI	184	59	21	17	11	10	92	210	150	31	12	193
XII	223	76	49	20	23	12	85	265	206	28	11	245

TABLE VI

PERCENTAGE OF WORDS FOUND IN BEGINNING READERS COMMON TO THREE VOCABULARY LISTS

		Thorndike							Gates			
Book	24th Year Book	1a1	1a2	1a3	1a4	1a5	Miscellaneous	Total	1	2	3	Total
I	77	22	14	7	5	9	40	98	66	16	7	89
II	80	27	17	10	10	8	24	95	75	14	2	90
III	82	25	18	9	7	7	31	97	80	10	5	95
IV	80	22	14	7	6	7	42	98	73	15	4	91
V	71	17	14	9	8	8	40	97	58	19	9	85
VI	81	21	12	8	7	10	43	99	71	15	4	90
VII	84	28	18	11	5	7	29	98	79	10	4	93
VIII	75	22	15	10	6	7	37	97	68	16	6	90
IX	84	26	15	12	6	6	33	97	71	14	5	90
X	88	41	18	4	8	5	23	98	90	3	½	93.5
XI	87	47	10	8	5	5	43	99	71	15	5	91
XII	82	28	18	7	8	4	31	97	76	10	4	90

list; 58 in the 1a2 list; 30 in the 1a3 list; 22 in the 1a4 list; 36 in the 1a5 list and 161 in all of the rest of the Thorndike lists, giving a total of 394 words found in the Thorndike lists. Two hundred sixty-six words in the first five hundred of the Gates' list; 65 from the second five hundred and 28 from the third five hundred; a total of 359 words found in the Gates' list.

Table VI shows that a large percentage of the words, as would be expected, are found in all three lists.

Three hundred twenty-five words were found in the readers that were not found in the Twenty-Fourth Yearbook list. Sixty-seven words, out of the total of 1207 words, were not found in the Thorndike list and 281 of the total were not found in the Gates' list.

As a result of this study, the following conclusions may be drawn:

1. There is apparently approximate agreement as to the number of different words a beginning book in reading introduces.

2. There are still too few words common to beginning books.

3. There are still too many words that appear but once in each book and too many words in the books have a too limited frequency.

REPORT OF A HIGH-SCHOOL PERSONNEL DEPARTMENT

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ONE of the significant trends in modern secondary school practice is the introduction into the schools of specialized departments manned by non-teaching workers, and devoted to the study of various student problems. The wide range of activities which such personnel workers might justifiably pursue, coupled with the natural limitations placed by circumstance upon the amount of time available for each, compel the personnel staff to choose some program of procedure founded upon fairly basic assumptions and aiming at some attainable and desirable goal.

A review of current educational periodicals reveals a rather pronounced dearth of material dealing with these more practical aspects of personnel activity, and the setting up of a program is usually accomplished only after rather careful collecting and summarizing of diverse material relating to the general fields of guidance, counseling, and research.

The program adopted at the University of Minnesota High School is presented here for the sake of whatever suggestive value it may possess, and should be considered as subject to possible drastic revision as circumstances or experience warrant.

The University High School is a laboratory school for the College of Education of the University and has a rather selected student personnel of about 350. The program here presented would certainly differ in many respects if it were drawn up for a typical large city high school, or any other distinctly different type of institution.

Reduced to basic fundamentals, the job of the department seemed to be two-fold: first, the gathering of data concerning individual students and groups of students, these data to be as reliable and valid as possible; and second, the using of these data and the making of them available to others who can use them. The latter refers in the first instance to personnel and administrative officers for use in conferences with students; in the second to teachers, for use in individualizing classroom content and method; and finally, to the Bureau of Educational Research of the College of Education and to the Institute of Child Welfare, for use in specific research studies of group behavior and trends.

*College of Education and Institute of Child Welfare.

As originally outlined for development over a period of time, the program of the department consisted in the following:

1. The application and use of reliable measures of intellectual capacity.

2. The use of the best obtainable measures of school achievement, both general achievement, and achievement in specific subject fields.

3. The securing of reliable indices of physical health, including knowledge of specific weaknesses and defects.

4. The use of the best measures of mental health and general emotional stability.

5. The measurement of whatever personality traits or behavior patterns that seem pertinent and measurable.

6. The measurement and analysis of personal and vocational interests.

7. The measurement of special capacities or aptitudes.

8. The measurement of the social, economic, and cultural status of the home background.

9. The use of the best cumulative individual student records to be secured or devised.

10. Individual counseling—educational, vocational, personal.

11. The development of an informal program of student and faculty education as to the normal services of the personnel office.

12. The accumulation of a body of up-to-date personnel literature as the basis of a personnel library.

The steps taken so far in pursuing the program are outlined below. The paragraph numbers concur with the item numbers in the outline above.

1. The first step was to gather together whatever data were already available. Of a purely objective sort, these consisted primarily of intelligence test scores. These were available for all University High School students as a result of an already established practice of administering to all entering students a three-hour battery of five group intelligence tests. The median IQ is recorded in the student's permanent cumulative record in the personnel office.

2. As measures of school achievement there were already available the individual's school grades in each subject and his honor point average of general scholastic standing. Whatever scores could be obtained from previous use of standardized tests in various departments of the school were also gathered together, as well as scores with respect to certain

basic functions, such as vocabulary, speed of reading, etc. An attempt was then made to determine the most highly reliable and valid test for use in each subject field, judgment on such tests being largely based upon the findings of Kelley[1] and Symonds.[2] The scores on these tests have been turned over to the Personnel Department, generally in raw score form, with "odds and evens" scores given so that the reliability of the test in the particular sample might be calculated. These raw scores have been transmuted into standard (sigma) scores based on their own distributions and then recorded in the appropriate place on the cumulative records in the personnel office. Further work on achievement records has also been instituted through the initiative of Dr. Charles W. Boardman, Principal of the University High School, in conducting a series of statistical studies on the reliability and validity of each teacher's objective examinations.

3. All students in the University High School are given a yearly medical examination by the school. The records for the boys are made in carbon duplicate and the second copies of these are filed with the students' cumulative records in the personnel office. For the girls, the records are less complete at the present time and should be improved by some such method as that used for the boys.

4. As measures of mental health and general emotional stability the Woodworth-House Mental Hygiene Inventory[3] was selected, since it was the most recent revision of the various Woodworth emotional history questionnaires. It was adapted by the writers for high school use by omitting certain duplicated, and otherwise undesirable, items, and mimeographed for use by the department. As further measures in this field, the Boston Psychopathic Hospital's revision of the Kent-Rosanoff Free Association Test[4] was adopted, as well as a check-list revision of the Wells form for the observation of reactions during clinical examination.[5]

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[1] Kelley, T. L. *Interpretation of Educational Measurements.* Yonkers-on-Hudson, New York: World Book Company, 1927.

[2] Symonds, Percival M. *Measurement in Secondary Education.* New York: Macmillan Co., 1928.

[3] House, S. D. *A Mental Hygiene Inventory,* Archives of Psychology No. 88, New York, 1927.

[4] Wells, F. L. *Mental Tests in Clinical Practice.* (Yonkers-on-Hudson, New York: World Book Company, 1927), p. 215.

[5] This revision was made by the writers. The Wells form may be found in Wells, *op. cit.,* p. 9.

6. To assist seniors in making vocational and educational plans for the next year, individual conferences were planned with each senior. To provide background for these conferences, as well as for other guidance and research purposes, it was desirable to have the best measures of personal and vocational interests which could be secured. Investigation seemed to indicate that the most nearly objective, as well as the most diagnostic, and perhaps the most valid, of such measures available was the Strong Vocational Interest Blank.[6] Unfortunately the blank is expensive to use on account of its elaborate scoring procedure. In its stead Miner's Analysis of Work Interests Blank[7] was employed. In addition to this blank, an outline of factors to be considered in making a vocational choice was drawn up.[8] This outline was used by the students personally and by both student and counselor in conference, and proved to be of considerable assistance in the mutual deliberations of the parties to the counseling. More recently a technique has been evolved in the department for scoring the Strong Blank[9] by machinery at a saving of about 75 percent over the usual clerical method, and in future conferences the results of this test will take a prominent part.

9. At the very outset it was thought desirable to set up some basic system of record-keeping. At the time the department was installed, it was hoped that the American Council on Education's *Cumulative Record Form for Secondary Schools* which had just been devised by Dr. Ben D. Wood and others[10] would prove suitable. At that time, however, the form was in the process of publication and was not available. A simple face sheet was therefore drawn up which contained space for most of the basic information, and which served until a revision of the above Cumulative Form was published. The revised Cumulative Form, still known as the Provisional Form, has been adopted as the basis of all personnel records in the department. As a supplement and feeder to this Permanent Cumulative Record a four page questionnaire has been prepared which is filled in by all students in the school.

10. Beside the routine conferences with seniors, (*cf.* paragraph 6, above) individual counseling has come about as a result of teachers'

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[6] Strong, E. K., Jr. *Vocational Interest Blank*, Stanford University Press.

[7] Miner, J. B. "An Analysis of Vocational Interests," *School Review*, XXXIII (1925), p. 744-54.

[8] This outline was prepared in the department. Copies may be had upon request.

[9] Rulon, P. J., and Arden, Wesley. "A Scoring Technique for Tests Having Multiple Item-Weightings," *The Personnel Journal*, IX (1930), pp. 235-241.

[10] *The Educational Record*, Supplement No. 8 (July, 1928), p. 17.

referring cases of various sorts to the department for study, and of many students' making appointments on their own initiative. The problems referred to the department range all the way from simple study difficulties through personal need for advice and on to definite emotional maladjustments and personality difficulties.

11. Early in the year an Observation Record Sheet was drawn up for use by the teachers in reporting cases to the department. This is a mimeographed form on typewriter-size paper, and has spaces for a statement of the essentials of the problem being reported.

At approximately the same time, to assist teachers in becoming more aware of possible personality difficulties, a list of some fifty different kinds of symptomatic behavior, which are often apparent in the classroom situation, was drawn up. This list, entitled "A List of Certain Behavior Patterns and Possible Personality Difficulties—Suggested for School Observation,"[11] was supplied to all teachers, and was found useful in creating greater understanding of behavior reactions which, although not immediately critical, should, nevertheless, be the concern of teachers and of personnel officers.

It will be observed that paragraphs numbered 5, 7, 8, and 12 do not appear in the above report of steps taken. Items 5, 7, and 8, dealing with personality measures, special aptitude measures, and home background ratings, respectively, are certainly essential to a comprehensive personnel set-up, and steps must soon be taken to make them a part of the active program. At the present time so few and so unsatisfactory are the available measures of personality traits at the high-school level, and so narrowly defined are the traits tested, that the use and study of such instruments are prone to be displaced by other more promising work.

With special aptitude measures the department did very little, partly because they are subject to the same shortcomings as are personality measures, and partly because the limitations of time and budget closed in before much had been done.

The lack of satisfactory measures of home background has prevented the institution of a systematic method of evaluating and recording this very important aspect of students' assets or liabilities. The Sims score card of Socio-Economic Status was used with all seniors and juniors in

[11] This list forms the basis for an article by Randolph B. Smith, soon to appear under the same title.

connection with the vocational and educational guidance work done with these classes, but the instrument seems to be in serious need of careful revision with a view to increasing both its validity and its reliability.

Item 12, dealing with the accumulating of a personnel library is felt to be of primary importance to such a department, but its accomplishment would seem to be best achieved by following the interests of the personnel staff.

It might be well to mention in conclusion the reason for having all forms used in the department mimeographed instead of printed. The practice was for the purpose of providing for early revision of forms after they had been tried out a short time in actual use.

A STUDY OF THE RELATIVE EFFECTIVENESS OF TWO TYPES OF STANDARD ARITHMETIC PRACTICE MATERIALS

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THE purpose of this study is to accurately determine which of two types of drill material is most effective in developing skill in arithmetic computation as measured by the Public School Achievement Tests. As one type of material included problems in arithmetic reasoning with those in arithmetic computation, it was decided that a measurement of the growth of arithmetic reasoning ability would indicate the value, if any, of problems of this type.

For several years a type of drill or practice material in arithmetic computation, referred to in this study as "type A" material, has been used successfully in the Ithaca public schools. A second type of practice material designated as "type B" in this study, has been represented as possessing certain advantages that result in greater pupil achievement. These advantages are principally of form, visibility, arrangement, printing, and content. As the type "B" material includes provision for formal practice in arithmetic reasoning, as indicated above, the scores in this field are included to indicate its effect.

The practice materials, both "A" and "B," together with the tests used to measure achievement in this study may be briefly described as follows:

"TYPE A" MATERIAL

"Type A" material consists of a Student's Record and Practice Pad, with complete directions for the use of the pad and for a record of scores made on the tests. Graph sheets, daily record sheets, and tables indicating time allowances and rates of work for the different grades are also included. The pad contains a number of sheets of tissue paper, underneath which are placed, by the pupil, printed lesson cards containing the combinations to be mastered. At the conclusion of a timed practice period the lesson card is taken out of the pad, turned over, and replaced under the tissue-paper sheet. The correct answers then show just above or below those the pupil has written. The scores, based upon the number of examples correct, are recorded daily upon the "Daily Record Sheet" in the pupil's pad. A lesson is repeated as many times

as necessary to accomplish mastery, or to work all problems correctly. The lessons in this series are such that they can be completed correctly in three minutes by an eighth grade child of "standard ability." The time is varied to adapt the lessons to grades below the eighth.

"TYPE B" MATERIAL

"Type B" material consists of a pad of test and practice sheets, and score cards which show progress by means of a graph of test results. The practice sheets have arithmetic computation problems on one side and problems in arithmetic reasoning on the other. They are designed for the same purpose as the "type A" material, i.e., to teach the "mechanics" of arithmetic. Answers to each set of problems are printed upon the back of a stub from which each practice sheet is detached prior to beginning work. Pupils may correct their own work or it may be collected for checking by the teacher. In this study the pupils corrected both types of materials used. They were allowed to prove and check their work provided that it could be done within the time limit set by the "A" type material. The drills in the "B" type pads follow up the presentation given by the teacher. The tests given at frequent intervals are diagnostic, pointing the way to remedial instruction.

THE PUBLIC SCHOOL ACHIEVEMENT TESTS

The Public School Achievement Tests are the work of Dr. Jacob S. Orleans. These consist of several "batteries" that cover all the basic subjects of the elementary schools. This particular study concerned itself with only the arithmetic reasoning and the arithmetic computation tests, as achieved by fourth grade pupils. Two forms of each of these tests were given, one in October 1928 and the other in April 1929. Form I of this test was used with over 625,000 pupils in all parts of the United States. The nation-wide standards were determined from reports sent in by each school using these tests. These standards are thought to be reliable for comparative purposes. It is felt that these tests are valid, thorough, practical, and scientific. The tests results are used in the belief that they give an accurate indication of achievement in the subjects for which they were used. An important part of these tests, listed as accessory material, is the teacher's handbook, answer keys, and class record sheets.

The study comprised two parts or phases, the first of which was a comparison of beginning type "A" material, usually introduced in the

fourth grade in Ithaca, with beginning type "B" material, designed by its author for use in the second grade. The study involved all pupils in the fourth B grades of the school system on October 16th, a total of 142 pupils. Of this total only 113 were present for the examination on the second form of the tests in April; the rest were absent due to illness, re-classification, and transfers to other systems. None of the pupils involved in the study had ever had any previous experience with any type of arithmetic practice material. Four grades used the "A" type material, and six grades used the "B" type material.

The second phase of the study was concerned with the "B" type fourth grade material that is usually given to children who had had two years of training with the same, but a more simple, system of drill material. This part of the study attempted to find out whether children progress more rapidly with very simple practice material, or with that which is more difficult and suited to the grade in which it is used.

At the end of the first two months it became necessary to give the groups using second grade material more advanced work, that is, the material of the next higher grade. This was because the processes of multiplication and division, a regular part of the fourth grade course, were not included in the second grade material used. To meet this deficiency, therefore, third grade "B" type material was used to supplement, for one group, the second grade pads. This constituted the only change or variation in the study as it was originally planned.

An attempt was made to set up as nearly as possible uniform and equivalent conditions for all groups. Later, unavoidable developments tended to handicap the three groups using the "B" type material, briefly, as follows:

1. In group B-II one teacher was changed to another school, her work being taken over by one unfamiliar with the "B" type material.
2. In group B-III a similar change took place in the middle of the term.
3. In group B-IV a teacher resigned and several weeks elapsed before the new teacher resumed the work with the "B" material.

In each of the above cases a loss of time followed the change of teachers and the work was slightly disorganized.

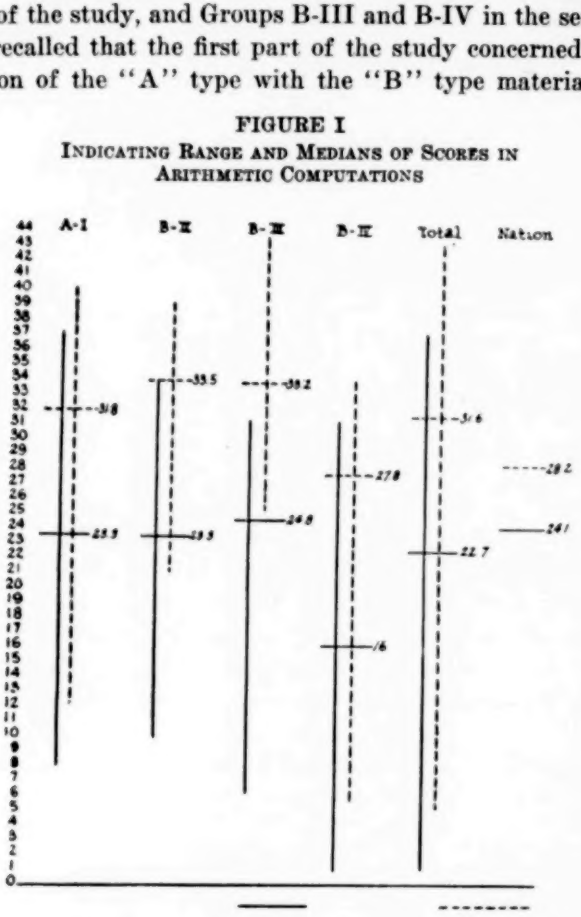
The "A" group was taught by experienced teachers who had used "A" type material for years, and who presented it regularly throughout the period of the experiment without variation or deviation of any kind.

Thus, we see that conditions favored the pupils who were using the type "A" material.

In the accompanying figures, the various groups are designated as A-I, B-II, B-III, and B-IV. Groups A-I and B-II were used in the first phase of the study, and Groups B-III and B-IV in the second phase. It will be recalled that the first part of the study concerned itself with a comparison of the "A" type with the "B" type material, and that

FIGURE I

INDICATING RANGE AND MEDIANS OF SCORES IN ARITHMETIC COMPUTATIONS



Legends: October Scores ———; April Scores .....; Medians represented by horizontal lines.

A-I used Courtis fourth grade material; B-II used Lennes second grade material; B-III used Lennes second grade material; B-IV used Lennes fourth grade material.

Achievement measured by Public School Achievement Tests.

the second phase of the study compared second grade "B" type material with fourth grade "B" type.

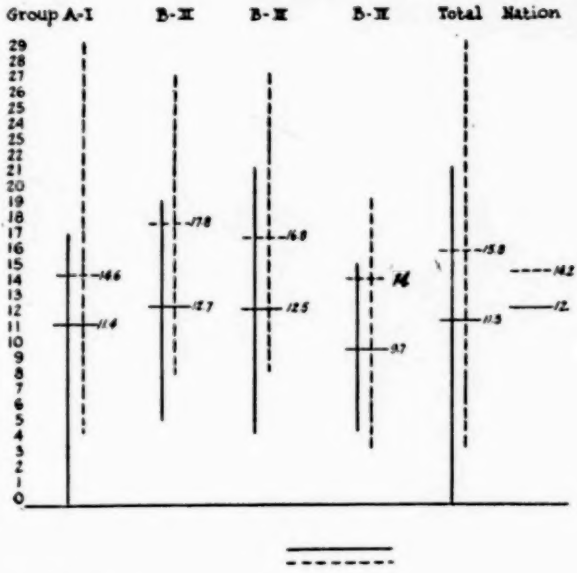
RESULTS: I. ARITHMETIC COMPUTATION

Figure I shows the range of arithmetic computation scores made on the Public School Achievement tests in October and in April, by each of the four groups in the study, as well as nation-wide medians. Figure III shows the relative gain made by each of the groups and the total gain for all groups.

Referring to the figures indicated, it is evident that Groups A-I and

FIGURE II

INDICATING RANGE AND MEDIANS OF SCORES IN ARITHMETIC REASONING

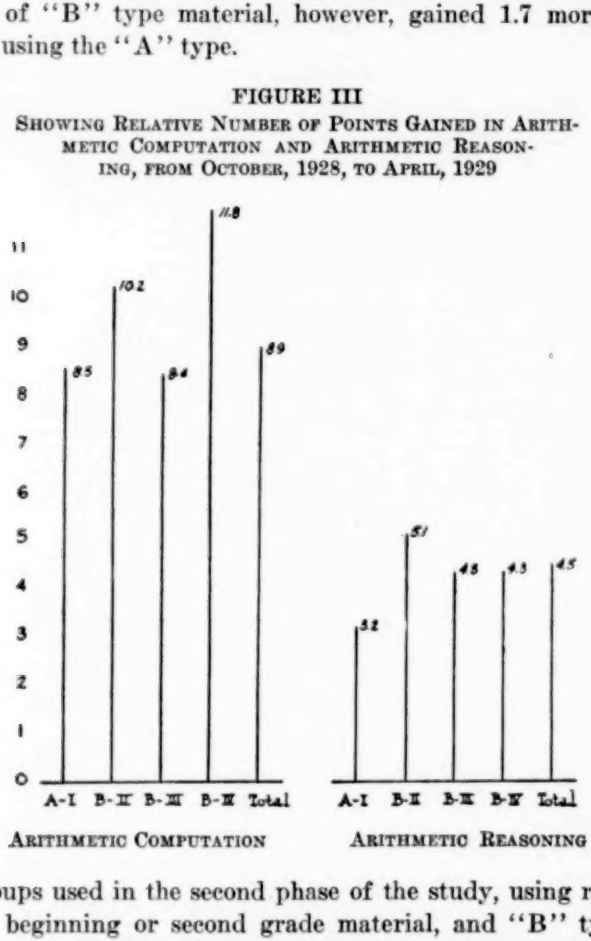


Legends:
- October scores ————
- April scores .....
- Medians represented by horizontal lines
- Group A-I used Courtis fourth grade material
- Group B-II used Lennes second grade material
- Group B-III used Lennes second grade material
- Group B-IV used Lennes fourth grade material
- Forms I and II, Public School Achievement Tests used to measure achievement.

B-II, used in the first phase of the study, each made a substantial gain. The users of "B" type material, however, gained 1.7 more problems than those using the "A" type.

FIGURE III

SHOWING RELATIVE NUMBER OF POINTS GAINED IN ARITHMETIC COMPUTATION AND ARITHMETIC REASONING, FROM OCTOBER, 1928, TO APRIL, 1929



The groups used in the second phase of the study, using respectively "B" type beginning or second grade material, and "B" type fourth grade material, also made satisfactory progress. The group using the more difficult (fourth grade) material made a greater gain than that using the easier second grade material. The net gain of this group was one of 3.4 problems. The total median gain for the entire grade was 8.9 problems.

These results seem to clearly indicate that "B" type material is superior to "A" type material for improving ability in arithmetic computation, and that, "B" type fourth grade material is productive of

better results in a fourth grade than the easier second grade or beginning material of the same type.

RESULTS: II. ARITHMETIC REASONING

Figure II shows the range of scores made in October, 1928, and April, 1929, on the Public School Achievement tests in Arithmetic Reasoning. Results are given for each of the four groups in the study, and nation-wide medians. Medians are indicated in all cases. Figure III shows the relative gain in the number of arithmetic reasoning problems correctly solved.

It is evident that provision of practice material in arithmetic reasoning is productive of increased ability in that field. It will be recalled that "A" type material makes no provision for arithmetic reasoning. The pupils using type "A" material were thus dependent upon their texts and regular classwork for their practice in this field, while the "B" type users had the additional advantage of frequent practice in arithmetic reasoning in connection with their practice pad material. The "B" groups gained from 1.1 problems to 1.9 problems more than the "A" group. The "B" group using advanced material (B-IV), gained equally in arithmetic reasoning with the group using easier material. Since the group that used the easier material experienced many difficulties due to changes in teachers, this last fact may not be significant.

CONCLUSION

1. "B" type material yielded results in arithmetic computation in the fourth grades of the Ithaca Public Schools, superior to the "A" type material.

2. Arithmetic computation material suited to the ability of the grade produced greater achievement than easier material of the same type designed for a lower grade.

3. The fact that practically all fourth B grades were below the median for cities the size of Ithaca and of the nation as a whole, suggests an earlier introduction of practice material—perhaps as much earlier as two years (second grade). Type "B" material is provided for second grade use.

4. Practice in arithmetic reasoning through the medium of practice pads is productive of decided advancement in this ability. ("B" type material provides this.)

DOES THE SCHOOL STRENGTHEN OR WEAKEN THE TENDENCY TO CHEAT?

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DURING the past few years, the problem of character training in its relation to the work of the public schools has been receiving special attention. Many investigations of various aspects of this question have been reported. Perhaps, the most extensive as well as the most significant is the report of the *Character Education Inquiry* published by Hartshorne and May with the title of "Studies in Deceit." The correlation table on page 259 of that publication suggested the present investigation. In that table, only one school shows a negative correlation between grade and deception in all the tests used. If a school is unable to reduce cheating in tests or in daily work as pupils advance through the grades, it is certainly failing to develop some desirable traits of character. This study, therefore, attempts to measure the relative difference between the amount of cheating done in a 5B grade entering departmental work and a 7A grade completing its first year in junior high school.

The question then becomes, "Will the pupils in 5B do more or less cheating in tests than those in 7A?" If a school is trying to give definite or systematic training in character development, it surely is as desirable to determine actual changes or growth in character as pupils advance through the grades as it is to measure their progress in the regular school subjects. This study describes a practical and easily administered method of measuring the relative difference between different grades.

The method used is called the duplicating technique in "Studies in Deceit." Late in November, 1928, a 5B and a 7A class were given the Nature Study Test of Battery C of the Public School Achievement tests. Each pupil numbered a sheet of paper according to definite directions and wrote all his answers in pencil upon it. At the close of the period, the papers were collected and taken to the office. Exact copies of these answer sheets were then made. As soon as possible, the original unmarked answer sheets were returned to the pupils with the request that each pupil should mark his own paper. To allay any possible suspicion, the pupils were informed that they had been asked to mark their own papers because no teacher was directly responsible for the subject of nature study. The pupils knew that it was customary for each teacher to mark the test papers pertaining to the subjects taught by him. The pupils

were urged to mark their papers accurately so that the results could be compared with the standards for this nature study test. Some of the answers were carefully read to the pupils by the writer and others were written on the blackboard while the pupils were marking their papers. The report room teacher was either absent from the room or quietly working at his desk to remove any possible fear of detection in case of cheating.

The test used in this study consists of four parts. Part I contains forty-one statements, and the directions are to mark the ones that are true with the letter *T* and the ones not true with the letter *N*. Part II contains eleven blanks which require only one word in each. Part III consists of twelve incomplete statements with four choices for the completion of each. The pupil is required to copy only the number, 1, 2, 3, or 4, to designate his choice for the best completion of each statement. Part IV is a matching type of test containing twelve blanks to be filled with numbers. From this brief description, it is evident that this test is very well adapted to the duplicating technique for measuring cheating. It really tests four different forms of cheating. First, incorrect answers can be marked correct; second, since nearly every pupil failed to answer all of the questions, answers could be written in during the checking; third, figures in parts three and four could be easily changed; fourth, favorable errors could be made in computing total scores. All four forms of cheating were actually found.

It is somewhat difficult to give a clear picture of the findings. They will be shown in two different ways: first, by indicating the difference between the pupil-marked scores and the actual scores; second, by reporting the number and percent that cheated in some form or another. Table I uses the first method of presenting the findings.

TABLE I

COMPARISON OF PUPIL-MARKED SCORES (A) WITH ACTUAL SCORES (B) AS MARKED BY THE WRITER ON THE NATURE STUDY TEST, BATTERY C, OF THE PUBLIC SCHOOL ACHIEVEMENT TESTS FOR A 5B AND 7A CLASS, AND HEALTH TEST FOR 7A

Units	5B Grade (39 pupils)			7A Grade (25 pupils)			Health Test		
	A	B	Diff.	A	B	Diff.	A	B	Diff.
Q3	38	31	7	49	42.5	6.5	67	64	3
MD.	28	25	3 ± 1.98	39	36.5	2.5 ± 2.40	64	57	7
Q1	23	18	5	36	27	9	49	51.5	−2.5
Mean	30.9	24.3	6.6 ± 2.24	34.4	29.0	5.4 ± 2.59	59.1	56.7	2.4 ± 2.85
S.D.	10.7	9.0		8.4	9.8		10.9	9.2	

The preceding table clearly shows that these pupils did not hesitate to increase their scores, and it seems to indicate that teachers should give

little or no credit for tests marked by the pupils themselves under uncontrolled conditions. (Two measures of central tendencies are shown in Table I on account of the small number of cases and for a better analysis of results.) The chances are 84 out of a 100 that the median of the 5B class was increased by cheating, and 76 out of a 100 for the 7A class. The chances that the average of the 5B grade was increased by cheating are 998 out of a 1000 and about 980 out of a 1000 for the 7A grade. This is conclusive evidence of cheating.

One interesting fact is suggested by an examination of the effect of cheating upon the upper and lower quartiles in the case of the two grades. The 5B pupils ranking above the median did relatively more cheating than those below the median in this test, but this condition is almost reversed for the 7A grade. A careful analysis of the individual scores also indicates that the 5B pupils ranking above the median in this test did more than their proportionate share of cheating, but that the 7A pupils ranking below the median really did more cheating than the other half of the class. This fact possibly implies a need for giving pupils a definite knowledge of the nature and significance of cheating in scoring their papers, for unless such instruction is given the brighter pupils will naturally become more clever in cheating as they advance through the grades.

Although the amount of cheating as indicated by the differences in the averages, 6.6 for the 5B grade and 5.4 for the 7A grade, is only 1.2 points less for the 7A grade, it suggests two possibilities. First, that this difference of 1.2 may be significant because it indicates that relatively fewer pupils cheated in the 7A class than in the other group. This will be presented in a further analysis. Second, this difference of 1.2 represents an increase of about 5 percent of the actual average of the 5B class. When the increase due to cheating for each grade is based upon their actual averages, the 5B class raised its average 27.1 percent and the 7A increased theirs only 18.5 percent. This difference indicates more cheating in the lower than in the higher grade, but since the amount of cheating is not so significant in this study as the relative number of pupils who do the cheating, that phase of the problem will be discussed later.

Table I also shows the results of a second test given to the 7A grade about one month later. The maximum possible score on the nature test is 76, and on the health test it is 84. For this reason, a greater difference might be expected between the averages of the pupil-marked scores

and of the actual scores on the latter test than on the former. The difference, however, between the averages for the nature test is 5.4 and only 2.4 on the health test. This seems to indicate much less cheating on the second trial, but the median was raised 7 points on the health test and only 2.5 points on the nature test. A possible explanation of this apparent contradiction may be made by stating that only three pupils scored their papers too low on the nature test compared to five on the health test. It is true, however, that the relative amount of cheating on the two tests was almost the same as will be shown in Table II.

For the purpose of this study, an analysis of each paper was made to classify the pupils according to the amount of cheating done. Since four forms of cheating were possible as previously explained, the pupils could be classified into five groups. Those pupils who scored their papers correctly or too low were placed in the honest group marked *H*. The ones who made mistakes in computation in their favor were marked doubtful or *H*—. Pupils who actually increased their scores one or two points by marking wrong answers correct, or by copying answers, or by changing answers were marked *C*, the cheating group. When scores were increased three or four points, such pupils were placed in the C plus group. All pupils increasing their scores more than four points were

TABLE II

5B AND 7A PUPILS DIVIDED INTO FIVE GROUPS ON THE BASIS OF CHEATING AS ESTIMATED BY THE REPORT TEACHER AND AS MEASURED BY ACTUAL TESTS OF THE DUPLICATING TECHNIQUE

	Grade 5B		Grade 7A		
Group	Teacher	Test	Teacher	First Test	Second Test
H	A, B, C, D, E, F, G,	A, B, F, H, R, V, W, Z, a.	C, D, E, F, I, J, L, N, P, R, S.	C, D, E, F, H, J, L, R, S, U, V.	A, C, D, E, F, H, J, L, N, Q, R, S, U.
	7 — 18%	9 — 23%	11 — 44%	11 — 45%	13 — 52%
H —	H, I, J, K, L, M, N, O, P, Q, R,	C, D, E, G, J, O, d, o, g, h, j.	A, B, O, Q.	A, G, K, M.	G, M, V.
	11 — 28.2%	11 — 28.2%	4 — 16%	4 — 16%	3 — 12%
C	S, T, U, V, W, X, Y, Z, a, b, c.	P, T, U, Y, b, o, l.	G, H, K, M, T, V, W, Y.	I, N, O, W.	B, I, K.
	11 — 28.2%	7 — 18%	8 — 32%	4 — 16.7%	3 — 12%
C +	d, e, f, g, h, l, j, k, m.	K, L, N, S.	X	B, X, Y.	O, W, Y.
	9 — 23%	4 — 10.3%	1 — 4%	3 — 12.5%	3 — 12%
C + +	1	I, M, Q, X, f, k, l, m,	U	P, T.	T, P, X.
	1 — 2.6%	8 — 20.5%	1 — 4%	2—8.3%	3 — 12%

classified C double plus. In Table II each pupil is represented by a letter, and the percentage of pupils belonging to each group is given. Besides this actual measurement, this table gives the classification of these two grades according to the judgment of their report teachers.

The preceding table shows that the 7A class has a percentage in the honest group about twice as large as the 5B class. If the two groups *H* and *H*— are combined, the higher grade has 62.5 percent compared with 51.2 percent for the lower grade. These differences are much more significant than differences in amount of score, for these percents represent the number of pupils who may be considered honest in marking their own papers. It is evident, therefore, that fewer 7A pupils are inclined to cheat than 5B.

Table II also shows how successful the report teacher is in classifying his pupils according to their tendency toward cheating in marking their own papers. The correlation by using Pearson's product-moment formula between the teacher's estimate of the 5B pupils and the results of the test is .48, and the same correlation for the 7A class is only .18. These correlations are low and seem to indicate poor judgment on the part of the teacher or a poor type of testing technique. One very good reason for the teacher's inability to classify his pupils according to the amount of cheating that might be expected is the fact that neither teacher had these pupils during the entire school day or for a very long period of time. One teacher taught the 5B class in only one subject and had the opportunity of knowing these pupils for only three months; the other teacher had taught the 7A pupils in one subject for one whole semester during the preceding year as well as during the three months preceding the test. It was fortunate that one group was given a second test about one month later for the purpose of comparing results. The correlation between the first and second trial is .83 with a P.E. of only .04.[1] On account of the small number of pupils and the limitation of teacher-pupil contact, too much emphasis must not be placed upon these results; but it is safe to conclude that teachers who have pupils for only a part of each day will not be able to classify their pupils according to honesty as accurately as can be done by the duplicating technique used in this study. On page 111, Book II, of "Studies in Deceit," it states that their method of teacher-rating honesty will not give correlations as high as .50 with the copying-from-answer-sheet type of dishonesty, even

[1] Used Table XVIII in Garrett's *Statistics in Psychology and Education.*

when all types of errors are eliminated. This seems to agree with present findings.

Since only two classes were compared in the fall of 1928, it seemed advisable to repeat this experiment in the fall of 1929. The same grades, 5B and 7A, were tested to determine whether the higher or lower grade would do more cheating. These pupils did not know anything about the previous experiment, for it had not been discussed in any way.

TABLE III

COMPARISON OF DIFFERENCES BETWEEN PUPIL-MARKED AND ACTUAL SCORES FOR 5B AND 7A GRADES IN FALL OF 1928 AND OF 1929 ON NATURE STUDY TEST

Grade	No. of Pupils	Q3	Md.	Q1	P.E. (mdn-diff)	Avg.	Stan. Error (avg-diff)
			1928				
5B	39	7	3	5	1.98	6.6	2.24
7A	24	6.5	2.5	9	2.40	5.4	2.59
			1929				
5B	25	10.2	6	−3.5	2.56	5.4	3.29
7A	27	0.8	1.0	4.7	2.88	1.79	2.28

Table III clearly shows that the 7A or higher grade in 1929 as well as in 1928 did considerably less cheating in marking their own papers. Although the amount of difference between pupil-marked scores and actual scores was somewhat less for the 7A grade in 1928, the difference for 1929 favors the 7A much more. In comparing the results of the 5B for both years, there seems to be just a little less cheating in 1929, but the record for the 7A grade in 1929 is much better both in medians and in averages than the 1928 class. A further comparison of the differences between the grades for these two years is shown in the following table.

TABLE IV

PERCENT OF PUPILS BELONGING IN EACH GROUP CLASSIFIED ACCORDING TO CHEATING FOR 5B AND 7A IN 1928 AND 1929

Grade	No. of Pupils	Percent H	Percent H—	Percent C	Percent C+	Percent C++
			1928			
5B	39	23%	28.2%	18%	10.3%	20.5%
7A	24	45%	16.7%	16.7%	12.5%	8.3%
			1929			
5B	25	48%	12%	16%	12%	12%
7A	27	69%	15%	4%	8%	4%

By comparing the proportion of pupils in the first two groups for each grade, the results for 1928 are 61.7 percent in 7A and 51.2 percent in 5B

that are classified as honest, and for 1929 are 84 percent in 7A to 60 percent in 5B. This clearly proves that in each experiment the 7A pupils had a greater percentage in the honest group and a correspondingly lower percentage in the groups that cheated. It also indicates better conditions for both grades in 1929 than in 1928. It is as desirable, if not more so, to find growth in honesty as pupils advance from grade to grade as in arithmetic or reading; but it is much more significant to find that higher standards are realized in the same grades for successive years.

CONCLUSIONS

The purpose of this study was to determine for the writer whether pupils tend to do more or less cheating in connection with their school work as they advance through the grades of his school. Although a scientific answer to this question should be one objective of the research department of every school system, it is much more important to utilize any evidence or truth revealed for the development of a better program of moral guidance. The method used in this study is easily applied and seems to have a rather high reliability for individual and group diagnosis. By using this method of measuring the tendency of pupils to cheat, it is possible to discover two very significant types of facts about any school system's program of character training. First, it will reveal the school's influence or effect upon the honesty of pupils in taking tests and in doing their regular work; second, it will give a teacher a more reliable basis for individual moral guidance than he can obtain from chance observations of each different pupil in his classes.

Although this investigation clearly indicates that for two successive years the 7A pupils in this particular school ranked higher in honesty in marking their own test papers than the 5B pupils, the results do not justify any special claims for the efficiency of its program of moral guidance. It does prove, however, that the influence of the instruction and the moral tone of this school not only offset any tendencies toward dishonesty but are positive in their effect upon the character of its pupils. For this reason, it may be claimed that the definite program of character development initiated several years ago by using opening exercises and home room periods for character training and by directing all teachers to make their instruction and discipline lead to the formation of desirable character traits is partially successful. In spite of the fact that the higher grade did less cheating, it is still evident that considerable cheat-

ing exists and comes from 16 percent of the 7A pupils to 40 percent of the 5B. Whether these conditions are better or worse than those in other similar school systems with no program of moral guidance will be unknown until many similar investigations are made by educators interested in this problem.

The second type of information that comes from this study has special value for remedial purposes. In comparing the teacher's judgment of the attitude of his pupils toward cheating with the findings of this investigation, considerable disagreement is noted. The correlation between the teacher's ability to divide his class into five groups according to honesty in marking their own papers and the test results ranges from .18 to .48 for 1928 and practically the same for 1929. These correlations are low enough to prove that a teacher can do very little personal guidance by depending upon chance observations for his information about pupils needing moral advice.

By using the duplicating technique described in this research, it is possible to discover those pupils so clever in deceit that they are constantly practicing the undesirable habit of cheating in the many different ways offered in all their school activities. A careful analysis of the results of this study has revealed several cases of pupils whom the teacher never suspected of cheating. In personal conferences with such pupils, it is possible to discover underlying opinions and ideas relating to honesty that may be corrected. It is very essential in any successful program of character training to develop the right kind of group or collective thinking on all moral problems. To deal effectively with those who exert a bad influence upon class honesty, a teacher must study and deal with each case independently. Perhaps the greatest value of the type of honesty test used in this research lies in the fact that it can be used as a basis for the individual moral guidance of those pupils who need it most on account of their skill in avoiding detection.

SHORTER ARTICLES

A STUDY OF SOME LITERATURE APPRECIATION ABILITIES AS THEY RELATE TO CERTAIN VOCABULARY ABILITIES

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THIS study is concerned with the general relation between vocabulary ability and some of the factors that are believed to contribute to the appreciation of literature. The main questions with which this study is concerned are:

1. What relation is there between certain vocabulary abilities and *discovery of theme?*

2. What relation is there between certain vocabulary abilities and *reader participation?*

3. What relation is there between certain vocabulary abilities and *sensory imagery?*

4. What is the relation between these three literature appreciation abilities?

Sixty-six subjects from two sections of the sixth grade in Raleigh, North Carolina, were used as subjects. Three vocabulary tests, each one a different type of test from the other, were selected and given to these pupils. These tests were used in an earlier investigation by one of the writers[1] and the entire procedure employed in this earlier experiment was used in administering these tests.

The first was designed to test a student's ability to find or select words that rhymed. The subjects were given some key words and then were set to the task of making or selecting words to rhyme with the key words. The second was one of word building. In this test the letters a – e – o – b – m – t were used as suggested by Whipple.[2] The third was a simple sentence vocabulary test designed after the Holley Sentence Vocabulary Test.[3]

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[1] Garrison, K. C. "The Relationship between Three Different Vocabulary Abilities," *Journal of Educational Research*, XXI (January, 1930), 43-45.

[2] Whipple, G. M. *Manual of Mental and Physical Tests:* Complex Processes, (Warwick and York, 1915), pp. 640-645.

[3] Holley, C. E. *The Holley Sentence Vocabulary Test.* Public School Publishing Company, 1919.

Three tests were devised for the examination of literary appreciation. These were designed to measure: first, discovery of theme; second, reader participation; third, sensory imagery. These three were chosen because they appeared to be very important elements in the interpretation and general feeling tone for literary productions. In suggesting remedial measures for reading, Gates[4] points out that certain types of comprehension should be encouraged. Among these are:

"1. Reading to get the general mood represented in a paragraph .....happy, lonesome, sad, angry.....

2. Reading to get the main idea."

Realizing that imagery is so prominent in literary work in which the feeling tone tends to stand out (especially is this true for poetry), the test on sensory imagery was chosen in addition to the two suggested in the quotation from Gates. The reliability and general value of this choice was given added weight and verification by a definition found in the introduction to a recent book of poetry: "Poetry is beautiful thought beautifully expressed in rhythmic language. Its chief characteristics are: rhythm, rhyme, pauses, melodious language, frequent use of figures of speech, and an abundance of pictures."[5]

From a rather extensive survey of tests for appreciation of literature applicable to grammar grades, only standardized reading tests for speed and comprehension, or slight modifications of such, seemed available. The Logasa-Wright Tests for the Appreciation of Literature[6] designed for high school and college were too difficult for sixth-grade children, but were used as a guide for devising tests of the factors in appreciation already referred to.

These tests were devised by choosing short selections from children's readers and literature series. Since ten samples were wanted for each of the tests, fifteen were selected for the first try-out. These were read to a class of thirty-seven sixth-grade children. The following directions were given for the exercise on the discovery of theme:

"Write your name at the top of a blank sheet of paper, and number your lines down the page through fifteen. You are going to have

[4] Gates, A. I. *The Improvement of Reading* (The Macmillan Company, 1927), pp. 85-86.

[5] Merrill and Sprague. *Contemporary Verse*, Little, Brown and Company, 1928.

[6] Logasa, Hannah, and Wright, Martha McCoy. "Tests for the Appreciation of Literature," Public School Publishing Company, 1926.

some selections of poems read to you. Each poem will be read twice. After hearing it the second time, write opposite the number, what you think the poem is about. First you will be given an example." The first stanza, "The Flag Goes By" was used, and the children readily saw that the theme was dealing with patriotism.

After the reading was finished, the papers were collected and the answers tabulated. Close synonyms were considered correct. This presented a new problem, because scoring was made less objective when synonyms were included. For example, a stanza in which *kindness* was the theme brought as responses: *love, kindness, friendliness, tenderness,* and *charity.* To offset this a multiple-choice type of answer was provided in the final test. The examples receiving the widest range of answers were eliminated; most of these were either too difficult or did not appear clear enough for the theme to be easily observed.

An example of an exercise used in testing "Discovery of Theme" is here given:

A little boy hung down his head,
And went and hid behind the bed,
For he stole that pretty nest
From poor little yellow-breast;
And he felt so full of shame,
He didn't like to tell his name.

Pride...bird...boy...shame...

The word *shame* best expresses the meaning of the stanza, and this word from the list of multiple-choice exercises should be underlined.

The tests for *reader participation* and *sensory imagery* were made in the same manner. No great effort was made to use selections either familiar or unfamiliar to the children. Care was taken to use material within their *range of ability.* Poetry was used in most cases because of easier adaptations.

The results of each of these *literature appreciation tests* on the sixty-six sixth-grade pupils were correlated with each of the *vocabulary tests* described earlier in this study. Table I gives the results of these cor-

TABLE I

RELATIONSHIP BETWEEN CERTAIN VOCABULARY ABILITIES AND APPRECIATION OF LITERATURE

Vocabulary Tests	Discovery of Theme	Reader Participation	Sensory Imagery
Sentence Vocabulary	.30 ± .08	.44 ± .06	.56 ± .05
Rhyming	.12 ± .08	.26 ± .08	.45 ± .07
Word Building	.16 ± .08	—.07 ± .09	.09 ± .09

relations. From a study of them one notices a significant relationship existing between the two vocabulary tests (sentence vocabulary and rhyming), and the results on the three tests for literature appreciation.

Word building gives negligible correlations with the various results on the literature appreciation tests. In the earlier study[7] already referred to, a correlation of .38 ± .07 was found between the results on the word-building exercise and the ability as measured by a sentence vocabulary. The relationship thus found between sentence-vocabulary ability and literature appreciation is due to factors other than those giving the relationship between word building and sentence-vocabulary ability.

TABLE II

INTERCORRELATIONS BETWEEN THE LITERATURE APPRECIATION TESTS

	Discovery of Theme	Reader Participation	Sensory Imagery
Discovery of Theme		.30 ± .08	.30 ± .08
Reader Participation			.26 ± .08

Intercorrelations computed between the different tests used in measuring literature appreciation are found to be positive and reliable but not very high. At first glance it appears evident that one ability does not necessarily indicate the presence of another in a somewhat equal proportion. This is borne out by a closer analysis of the highest and lowest scores on the different tests. One would conclude from the correlations given in Table II that the various phases of literature are quite different and to some degree are independent of each other. The fact is, each of these abilities seems to be more dependent upon sentence-vocabulary ability than on the existence of one of the other literature appreciation abilities. Literature appreciation, then, seems to be made up of a number of abilities somewhat independent of each other, but these become integrated into a general unit that we consider as literature appreciation.

A STATISTICAL PREDICTION OF HIGH-SCHOOL SUCCESS FOR PURPOSES OF EDUCATIONAL GUIDANCE[1]

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MANY factors seem to enter into the school success of students. Sears[2] mentions general mentality, special abilities, interests, physique, social

[7] Garrison, K. C. *Op. cit.*, p. 44.

[1] Based upon a more extended Master of Arts Thesis, Colorado State Teachers College, Greeley, Colorado, June, 1929.

[2] Sears, J. B. *The School Survey* (Boston: Houghton Mifflin Company, 1925), pp. 330.

and moral capacity, native language, home conditions, race traditions, home occupation, and social and economic status of the family. Proctor[3] adds previous training, kind of teaching, health, character, vocational ambition, and personal disposition. Viteles[4] includes appearance, experience, and temperament.

In determining some of the factors which contribute to high-school success and the amount of weight each should have, a number of tests and measures were given to 132 Windsor, Colorado, high-school students in grades 9 to 12 during the school year 1927-1928. These tests included the following: (1) the Terman Group Test of Mental Ability;

TABLE I

COEFFICIENTS OF CORRELATION BETWEEN THE FACTORS: AVERAGE HIGH-SCHOOL GRADES, X_1, SCORES ON THE TERMAN GROUP TEST OF MENTAL ABILITY, X_2, CROSS ENGLISH TEST SCORES, X_3, SIMS SOCIO-ECONOMIC STATUS RATINGS, X_4, AND RATINGS FOR SCHOOL HABITS, X_5; WITH MEANS, M, AND SIGMAS OF DISTRIBUTION, S, FOR 76 SOPHOMORES AND FRESHMEN IN WINDSOR, COLORADO, HIGH SCHOOL IN 1927-1928

	X_5	X_4	X_3	X_2	X_1
X_1	.8071 ± .027	.0989 ± .076	.6323 ± .046	.7466 ± .034	
X_2	.5648 ± .052	.2314 ± .004	.6649 ± .043		
X_3	.6061 ± .042	.1005 ± .076			
X_4	.0640 ± .077				
M_s	5.84	6.79	125.22	104.74	82.05
S	1.85	1.17	16.72	33.40	6.36

TABLE II

COEFFICIENTS OF CORRELATION BETWEEN THE FACTORS: AVERAGE HIGH-SCHOOL GRADES, X_1, SCORES ON THE TERMAN GROUP TEST OF MENTAL ABILITY, X_2, CROSS ENGLISH TEST SCORES, X_3, SIMS SOCIO-ECONOMIC STATUS RATINGS, X_4, AND RATINGS FOR SCHOOL HABITS, X_5; WITH MEANS, M, AND SIGMAS OF DISTRIBUTION, S, FOR 56 SENIORS AND JUNIORS IN WINDSOR, COLORADO, HIGH SCHOOL IN 1927-1928

	X_5	X_4	X_3	X_2	X_1
X_1	.8797 ± .020	.2180 ± .080	.6957 ± .047	.6457 ± .053	
X_2	.5238 ± .065	.3607 ± .078	.6451 ± .052		
X_3	.6407 ± .053	.3183 ± .081			
X_4	.2520 ± .084				
M_s	6.27	6.589	128.84	125.00	83.82
S	1.964	1.232	20.185	32.89	5.76

[3] Proctor, W. M. *Educational and Vocational Guidance* (Boston: Houghton Mifflin Company, 1925), p. 42.

[4] Viteles, Morris S. "The Clinical Approach in Vocational Guidance," *The Vocational Guidance Magazine*, VII (October, 1928), pp. 1-9.

(2) the Cross English Test; (3) the Sims Score Card for Socio-Economic Status; and (4) the New York Rating Scale for School Habits. High-school achievement was measured by averaging the teachers' grades in all subjects that the student had taken so far in high school. The students were rated in school habits by those teachers who had had them in some regular high-school subject. A total score of school habits for each student was obtained by taking the average of all these teachers' ratings from 0 to 10 for each trait and then dividing the sum of these averages by 9, the number of traits in the scale. By this method, the highest rating for any student would be 10.

Coefficients of correlation between these factors were computed by the product-moment method. The results of these calculations appear in Tables I and II.

These results would indicate the value of intelligence and the importance of good school habits to successful school work. They also show a lack of relationship between school work and the socio-economic status of the home. The correlation between intelligence and school habits tends to show that the brighter student more often has the better school habits.

Tolley and Ezekiel[5] have presented a method of solving multiple correlation problems when (1) the multiple regression equation, (2) the coefficients of multiple correlation, R, and (3) the partial correlation of each independent variable with the dependent variable are wanted. Dr. Garrett[6] has modified this method to better adapt it to problems in psychology and education.

Using the data in Table I, the following regression equation in score form, which may be used to predict grades, was obtained:

$$X_1 = .083\,X_2 + .003\,X_3 - .207\,X_4 + 1{,}922\,X_5 + 63.18.$$

The coefficient of multiple correlation, $R_{1(2345)}$, or the correlation between grades and all the other factors combined was found to be .881 with a standard error of estimate of 3.003 units on a marking scale from zero to a hundred. Coefficients of determination (d) were computed. These coefficients measure the fraction of complete determination for which any

[5] Tolley, H. R., and Ezekiel, M. J. B. "A Method of Handling Multiple Correlation Problems." *Journal of American Statistical Association*, XVIII (December, 1923), pp. 993-1003.

[6] Garrett, Henry E. "A Modification of Tolley and Ezekiel's Method of Handling Multiple Correlation Problems." *Journal of Educational Psychology*, XIX (January, 1928), pp. 45-49.

independent variable is directly responsible in a given system of factors.[1] They are as follows:

$$d_{1.2} = .1881 \qquad d_{1.23} = .0050 \qquad d_{1.34} = -.0001$$
$$d_{1.3} = .0001 \qquad d_{1.24} = -.0076 \qquad d_{1.35} = -.0027$$
$$d_{1.4} = .0015 \qquad d_{1.25} = .2740 \qquad d_{1.45} = .0059$$
$$d_{1.5} = .3129$$

These results show that 77.72 percent of the high-school grades for the sophomores and freshmen were determined by the factors included in this study.

The following regression equation was obtained for the senior-junior group from data in Table II:

$$X_1 = .04\,X_2 + .036\,X_3 - .376\,X_4 + 2.058\,X_5 + 63.40$$

The coefficient of multiple correlation for this group was found to be .9125 with a standard error of estimate of only 2.355. The following coefficients of determination were obtained:

$$d_{1.2} = .0510 \qquad d_{1.23} = .0370 \qquad d_{1.34} = -.0065$$
$$d_{1.3} = .0161 \qquad d_{1.24} = -.0131 \qquad d_{1.35} = .1136$$
$$d_{1.4} = .0064 \qquad d_{1.25} = .1658 \qquad d_{1.45} = -.0283$$
$$d_{1.5} = .4906$$

These results indicate that 83.28 percent of the average high-school grades for juniors and seniors are accounted for by these measures.

The results of this study would tend to show that if a counselor had an accurate rating for school habits on a high-school entrant as well as his intelligence level, he would be materially aided in his guidance work insofar as advising the individual to undertake certain work in the regular academic curriculum.

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[1] For discussion and use of path coefficients and coefficients of determination, see the following references:

Wright, Sewell. "Correlation and Causation." *Journal of Agricultural Research*, XX, No. 7, 1921.

Wright, Sewell. "Systems of Mating," *Genetics*, VI, 1921.

Burks, Barbara. "Statistical Hazards." *Twenty-Seventh Yearbook of the National Society for the Study of Education, Part I*, Section 4 (The Public School Publishing Company, Bloomington, Ill.), 1928, Chapter II.

Heilman, J. D. "Relative Influence, etc." *Twenty-Seventh Yearbook of the National Society for the Study of Education, Part II*, 1928, Chapter II.

A FURTHER STUDY OF THE VALIDITY OF A TEST OF SOCIAL INTELLIGENCE[1]

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IN an earlier study[2] the writer pointed out that the Thorndike Intelligence Examination and the Moss Social Intelligence Test were measuring the same variable or variables to a marked degree. This tends to refute the concept of social intelligence as being a phase different from academic or abstract intelligence, unless we investigate further the relationship of the measures yielded by the tests.

This report is concerned with the study of paired scores yielded by Part III (the reading section) of the Thorndike Intelligence Examination, by the total battery of tests of the Thorndike Intelligence Examination, Series of 1925-1929, and by the Moss Social Intelligence Test. The records of 646 college freshmen were considered. The data were obtained in the State Teachers College of San Diego during two school years, 1927-1929. The three distributions are summarized in Table I.

TABLE I
SUMMARY OF SCORES OF 646 CASES

Measure	Range		Mean	P.E.$_M$	S.D.	C. of V.
	From	To				
Thorndike total equivalent score	12	102	61.0	0.38	14.47	23.72
Thorndike reading score[3]	—2	118	56.0	0.55	20.62	36.82
Moss	24	142	98.2	0.47	17.83	18.16

The findings of this study depend for their value upon whether this is or is not a normal college group. The reliability has been computed for the differences between the mean scores yielded by the Thorndike Intelligence Examination, Series of 1925-1929, and by the reading section of this test for this group and for a group of 1233 entrants into the San Diego State Teachers College. The difference between the mean total equivalent Thorndike scores was .60 of the standard error of the difference. The chances are 73 in 100 that the true difference (the differ-

[1] Devised by F. A. Moss and his associates.

[2] Broom, M. E. "A Note on the Validity of a Test of Social Intelligence." *Journal of Applied Psychology*, XII (August, 1928), 426-8.

[3] This is the raw score yielded directly by the test.

ence getween the true measures) is greater than zero, and the difference is twenty percent of what it should be to insure a difference always greater than zero. The difference favored the group of 646 students. The difference between the mean reading scores was .42 of the standard error of the difference. The chances are 66 in 100 that the true difference is greater than zero, and the difference is fourteen percent of what it should be to insure a difference always greater than zero. The difference favored the group of 1233 students. The differences noted are accidental, i.e., not greater than might arise by the fluctuations of random sampling from identical material. Since only 258 students, considered in the first study, (see footnote 2) other than those considered here had taken the Moss Social Intelligence Test, no effort to check the normality of the group with this test was attempted.

The agreements between the three series of scores are given in Table II.

TABLE II

MEASURES OF RELATIONSHIP AND OF LACK OF RELATIONSHIP BETWEEN THE PAIRED SERIES OF SCORES—646 SCORES

Measures compared	r (Pearson)	P.E.r	k
Social intelligence and Thorndike reading scores	.603	.017	.798
Social intelligence and Thorndike total scores	.579	.018	.815
Thorndike total and Thorndike reading scores	.796	.010	.605

The coefficient of correlation representing the agreement between the paired Thorndike total and Moss test scores was corrected for attenuation in order to obtain an approximation of the value of the coefficient if neither series of scores was affected by imperfections of measurement. The corrected coefficient was .666.

Coefficients of multiple correlation were computed for the several series of scores. The value of the coefficient for the total Thorndike score versus the other two variables was .806; for the Thorndike reading score versus the other two variables, .817; and for the Moss score versus the other two variables, .627.

Coefficients of partial correlation were also computed for the several series. The value of the coefficient for the paired total Thorndike and social intelligence scores when reading is held constant is .206; for the paired total Thorndike and reading scores when social intelligence is held constant, .688; and for the paired Thorndike reading and social intelligence scores when mental ability is held constant, .289.

It is apparent that the marked correlation between social intelligence as measured by the Moss test and academic intelligence as measured by

the Thorndike Intelligence Examination is really self correlation of reading comprehension as measured in the two tests. Reading, then, is the "common variable" suggested in the earlier study (footnote 2). This finding explains the apparent lack of validity of the Moss test.

There is one additional method for demonstrating the importance of reading to the agreement between scores yielded by the two (Moss and Thorndike) tests. The re-distributed data are summarized in Table III.

TABLE III
SUMMARY OF THE DATA BY QUADRANT GROUPINGS

Intelligence Md	Reading Md: Below median	Reading Md: Above median
Above median	N = 61 Range = 62 to 127 M = 98.1 S. D. = 12.42	N = 262 Range = 68 to 142 M = 109.8 S. D. = 13.16
Below median	N = 61 Range = 59 to 134 M = 100.9 S. D. = 14.12	N = 262 Range = 24 to 125 M = 87.30 S. D. = 16.59

The data given in Table III indicate that both reading comprehension and academic intelligence are important factors in earning a score on the Moss Social Intelligence Test.

The sum total of the evidence points to the conclusion that social and academic intelligence are truly different variables. The error, when we secure marked correlation between measures of the two variables, is not in our theoretical conception of the differing phases of intelligence and their relationships; it lies in our crude attempts to measure the variables accurately.

HOW ACCURATELY DO TEACHERS SCORE ACHIEVEMENT TESTS

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ONE of the problems in conducting any extensive testing program that confronts the director of research in the smaller cities is the ad-

ministration and scoring of the tests. Who should administer and score the tests? If this work is done by the teachers, how accurate are the results?

Since 1925, the writer has relied almost entirely upon the classroom teacher for the giving and scoring of tests in the various testing surveys made in the city. The teachers give the tests to their own groups, score these papers, and tabulate the results (tables of distributions in most cases). These tables are sent to the office and from them are tabulated grade and school medians for the city.

All tests, before being administered by the teachers, are discussed with them either by the director of research in teachers' meetings or by the principals at the time the tests are distributed. Detailed mimeographed instructions are also given to each teacher. It is impossible, however, to provide personal supervision for the teachers at the time the tests are given.

From time to time the test booklets have been sent to the office and checked by sampling, but not until this fall have all the papers been re-scored and the errors tabulated.

The Tests.—The tests which were re-scored were the Monroe Silent Reading Tests, Revised: Tests I and II, Form 3. In scoring these tests and determining the score in comprehension and rate of each pupil, the teacher had the following tasks to perform: (1) The paragraphs marked by the pupils must be checked as right or wrong; (2) The number of right responses must be counted; (3) The number of words read by each pupil in the four minutes allowed for the test had to be divided by four in order to determine the rate of reading in words per minute; (4) In Test II, five had to be added to the number of correct responses of each pupil and twenty-nine to each pupil's rate per minute in order to make the results of Form 3 comparable to those of Form 1; (5) Two distributions of scores, one for comprehension and one for rate had to be made. Thus, in addition to correcting the items of the test, simple arithmetical calculations were necessary.

The number of test papers re-scored was 3569. Of these 2745 were Test I and 824 Test II. They were given and scored by 93 different teachers. One hundred-fifty tables of distributions, each containing one table for rate and one for comprehension, were checked.

The Results.—

93.64 percent of the papers were correctly scored

23.6 percent of the teachers made no errors in correcting the papers or tabulating the results
12.0 percent of the tables of distribution contained errors
Tabulating the errors by schools, the percentages of correct papers per school varied from 85.3 to 98.6.

Although three teachers out of every four made some errors, the number and extent of these errors, with only a few exceptions, were not very serious. One-fourth of the teachers had one paper or test booklet with errors, i.e., errors made by the teachers in correcting the tests, one-fifth had two papers with errors, and approximately one-fourth had more than two papers with errors. The largest number of tests incorrectly scored by any teacher was nineteen. In this case the teacher rescored one paragraph as correct which was obviously incorrect. This was done after the paragraph had been previously marked correct by the teacher. In only three cases was the number of papers incorrectly marked by the teacher sufficient to change the median of her group.

How Serious Was the Error.—Of the 149 test papers which the teachers scored incorrectly, 132 were in error by one paragraph or one point in score in comprehension. Of these 132, fifty-five were marked one point too high and seventy-seven one point too low. Four test papers were scored two points too high; ten were scored two points too low, and one paper was scored four points too high. The teachers gave twenty-three pupils' scores in rate which were too low and thirty-five pupils' scores which were too high. In these scores, ten were in error from one to four words, sixteen in error from five to nine words, eighteen from ten to nineteen words, nine from twenty to twenty-nine words, and five from thirty words or more.

What Errors Did the Teachers Make.—The errors made by the teachers in correcting these reading tests were divided into two classes. These were: (1) Correcting the items of the test, and (2) the mathematics of the scoring. The mathematics consisted of counting the items or paragraphs correctly marked by the pupils, dividing by four the number of words read by each pupil, and adding five and twenty-nine to the scores in Test II. The errors were distributed as follows:

30.4 percent were in correcting the items of the test
37.4 percent were in counting the number of correct items
20.7 percent were in dividing by four the number of words read by each pupil

1.3 percent were in adding five or twenty-nine to the raw scores of Test II

10.1 percent were unclassified

Conclusions.—The errors which were made by the teachers in correcting the Monroe Silent Reading Test did not result from a failure to follow the directions for scoring the test. They were rather of such a character as might be expected when any large number of corrections or calculations is made.

The city grade medians and, with few exceptions, the medians of the groups within the grades were not affected by the rescoring of the tests.

The scoring of test papers by the teachers, after a period of training which may be obtained while the teacher is engaged in teaching, yields satisfactory results and makes it possible for the bureau of research with a small personnel to carry out extensive testing programs.

EDITORIALS

SOME ISSUES IN THE ORGANIZATION OF SUBJECT MATTER

While research of the first order has been done during the last decade, in the scientific selection of subject matter, little has been done, as yet, in the systematic study of the organization of subject matter. In an earlier editorial[1] the writer discussed, from the point of view of needed research, some of the issues involved in the organization of subject matter in general. It is the purpose of this editorial to discuss this matter with reference to the particular school subject of history.

The subject of history, when systematically pursued, is supposed to yield five more or less general values: (1) an understanding of present day social practices, conventions, and institutions in the light of the past; (2) an appreciation of the changing, evolving, and emerging character of society, and of the personal and environmental factors contributing to change; (3) the ability to participate more intelligently in the social, civic, and economic activities of mankind by reason of having vicariously experienced the doings of man and of peoples in remote times and places; (4) a sense of values such as can be obtained only from a study of human wants and social conventions over long periods of time; and (5) a mental technique of working with the documentary evidence of historical method.

While the historian may merely aim to produce in his writings a faithful record of the past, one studies history to understand present values, conventions, and institutions, their emerging character and how they came to be, and to get the background of experience prerequisite to intelligent participation in the social undertakings of mankind. History, like science, aims to increase man's understanding of the phenomena with which he comes in contact and in which he plays a part, by explaining their underlying causes, characteristics, and relationships. It differs from the experimental sciences, however, in that its data are, not the controlled and quantitatively recorded and impersonal observations of the laboratory, but the uncontrolled observations of untrained and sometimes personally biased observers of the happenings of everyday life partially and descriptively recorded. History thus labors under the limitations of the incompleteness of its data, their subjective character and personal application, and their reliance upon the uncontrolled observations of its participants; but, since man possesses no better alternative, he must make the best of the records of history for such guidance as he can secure from them. The understanding that one gains from a study of history, like the study of science, leads from the development of

[1] Barr, A. S. "The Organization of Subject Matter," Editorial, *Journal of Educational Research*, XX (October, 1929), 207-208.

rules of procedures to the opportunity to secure cues to more intelligent thinking about the problems and practices of everyday life. Some understanding of the fundamental character of history is essential to a study of its organization for teaching purposes.

The program for the systematic study of the organization of the subject matter of history for teaching purposes, like the program for the scientific selection of subject matter, must start with a consideration of the educational objectives. Having agreed upon the objectives of history, the different methods of organizing subject matter may then be studied experimentally to determine their relative merits. In an experimental study of the organization of history for teaching purposes, one will probably want to study the relative merits of a number of alternatives: (a) of chronologically organized history versus history organized by movement; (b) of the systematic all-round study of events versus the study of special aspects of events, such as the social, civic, or economic aspects of events; (c) of history organized around the present with a look to the past versus history organized around the past with a look to the present; (d) of history organized for the backward tracing of events versus history organized for the forward tracing of events; (e) of history organized for the rediscovery of its major generalizations under direction versus generalized history in which the facts are already interpreted and ready to be learned by the pupils taught; (f) of history organized around the detailed study of selected periods, movements, and events versus history organized to present only the general outlines of civilization; (g) of history organized around men versus history organized around events; (h) of history presented as narrative versus history presented as exposition; (i) of history presented as a separate course versus history presented as a part of a unified course in history and the social studies. These alternatives all need careful investigation. We know very little about these matters at present.

Closely related to these problems of organization are the problems of the gradation of subject matter. The problems, activities, and interests of history are adult problems, activities, and interests. Its mental techniques are those of mature minds involving the interpretation of complex phenomena. Immature minds, as shown by the Binet Scale, for example, are only able at first to identify objects, then to describe them, and only much later to perceive relationships and to draw inferences. There is some doubt as to the value of history that merely describes or identifies. From this point of view it becomes, therefore, a serious problem to determine what can and what cannot be taught at different grade levels. The mere teaching of time, place, and names of historical events is not history. The problem, therefore, of placing history so that it may be profitably studied becomes a difficult one, and one that should not be left to the whims of personal opinion, judgment, or tradition. The history taught in our schools to-day falls far short of what is expected of it because of the lack of reliable information about how it can best be organized for teaching purposes.

A. S. BARR

REVIEWS

Address all communications relative to book reviews to Editor E. J. Ashbaugh, Miami University, Oxford, Ohio.

RESEARCH COUNCIL OF THE MUSIC SUPERVISORS NATIONAL CONFERENCE, *Survey of College Entrance Credits and College Courses in Music.* New York: National Bureau for Advancement of Music, 1930. vi + 209 pp.

Lack of standardization of music as a teaching subject has made attempts at surveys very difficult and unsatisfactory. Instruction has differed greatly, not only in the public schools as contrasted with the colleges, but from school to school the country over. A combination of pride and jealousy has made many schools set themselves up as models and yet refuse to give information as to their teaching administration. The present attempt seems to have met with an honest response and its success surpasses previous efforts.

The book is in large part a series of detailed statements of the practice of 594 colleges and universities in accepting high-school music credits for entrance and in crediting music as a major, minor, or elective in undergraduate work. For the casual reader, by far the most interesting and valuable part of the work is a summary of about thirty pages by P. W. Dykema, Professor of Music Education, Teachers College, in which are set forth in an admirable way the purpose of the survey, what was accomplished, and certain deductions. Some of the interesting points discussed are: the number of credits allowed for college entrance and the types of music study which are so credited; the amount of credit colleges give in music and the variance of this credit according to the academic or music degree conferred; a comparison of practices between private institutions and land-grant schools and between schools of the east and south and those of the middle-west and west. The summary is supplemented by a discussion of answers received to a second questionnaire sent to schools who do not allow entrance credit in music or offer college courses for credit in that subject.

It is evident from this survey that the acceptance of entrance and college credit has increased rapidly during the past ten years. The book expresses the belief and hope that this increased recognition of music by colleges will have a marked effect upon the high-school curriculum.

This is the second of a series of major publications by the National Bureau for the Advancement of Music, having been preceded by "The Giving of High-School Credits for Private Music Study."

ROYAL D. HUGHES
Ohio State University

SCOTT, ADELIN WHITE, *A Comparative Study of Responses of Children of Different Nationalities and Environments on Intelligence and Achievement Tests.* New York: Teachers College, Columbia University, 1929. 30 pp.

Dr. Scott's monograph analyzing fourth and fifth grade National Intelligence Test data from the Texas Educational Survey of 1925 and Stanford

Achievement Test data from the El Paso schools presents results confirming those of earlier investigations. In reading ability American white children surpassed Mexican children of the same chronological ages. In arithmetical abilities, however, the differences were small except for children with low chronological ages.

In the verbal tests as well as in intelligence quotients derived from the total National Intelligence Test children of parents engaged in agriculture were below those whose parents were engaged in non-agricultural occupations.

A comparison of similar data from the National Intelligence test for children in communities consisting of Anglo-Saxon American born parents only, Anglo-Saxons intermarried with other nationalities, and German born parents only, showed consistent differences among the communities on the verbal tests that were at variance with the higher intelligence quotients found among the children of American born parents only.

The monograph represents a careful analysis of the data employed. A misprint in the formula for determining the standard error of a difference between two means (p. 15) does not affect the work itself. Except for the comparison of American and Mexican children the results may be an indication of community selection rather than of racial differentiation. Taken in conjunction with similar studies made in other communities, however, it will be a contribution toward the solution of the problem of racial differentiation.

M. J. VAN WAGENEN
University of Minnesota

HAYES, WAYLAND J. *Some Factors Influencing Participation in Voluntary School Group Activities.* New York: Columbia University, 1930. vi + 82 pp.

This book is an excellent inquiry into the problem of participation in extra-curricular activities. The outline of possibilities in participation, the inherent values, definition of activities, and methods of participation and control are excellent. Its method and spirit of investigation recognizes clearly the great possibilities of educational values and the development of the individual through participation in activities. Among the major problems of present-day administrators, this book also recognizes the limiting of activities and the encouraging of shy or diffident pupils in some sort of participation.

The methods and technique used in the survey and study at the Cliffside High School are excellent and so well worked out that they become valuable methods as procedures in this field. While the technique of inquiry is valid, one does, however, have some misgivings as to the final generalizations. This is due rather to the small number of students surveyed and not to the methods employed. A survey of another high school about the same size might offer divergent outcomes.

The limited amount of data used does not vitiate the good features of the book, however, for its value lies largely in its recognition of the several problems and the various techniques outlined and employed in moving upon situations at hand. These, as stated above, are excellent.

J. G. MASTERS
Central High School, Omaha, Nebraska

SHANG, CHUNG I. *A Method of Selecting Foreign Stories for American Elementary Schools.* New York: Columbia University, 1929. 46 pp.

This manual is an account of the process used by Mr. Shang in selecting three hundred fifty stories from Chinese

folk lore, suitable for presentation to American children in the elementary schools. For this selection Mr. Shang read twenty thousand pages of Chinese folk literature, collecting one thousand thirty stories. He then eliminated all stories which were not appropriate for American children. First, he discarded all those which presupposed an intimate knowledge of Chinese social, historical, traditional, and linguistic backgrounds, and those which required an adult's understanding of mysticism, symbolism, love, and romanticism. Seven hundred stories survived this elimination. To these seven hundred he applied certain criteria of literary excellence which he selected from the writings of eleven authorities on children's literature. By study and comparison of all standards of literary excellence listed by each authority, Mr. Shang was able to integrate standards under nine heads. He discarded four of these because they were of such minor importance that only one or two authorities listed them at all. The elimination of stories on the basis of literary excellence left the author three hundred fifty stories. These he analyzed for important factors in children's interests in reading. Here again, by comparing all factors listed by seven authorities working in the field of children's reading interests, Mr. Shang was able to select six criteria by which to analyze the remaining stories. He did not eliminate more of the stories; he ranked them instead, assigning weights to the criteria used.

After eliminating all that he could and ranking those which were left, the author translated thirty stories into English. These translations are soon to be published by Laidlaw Brothers, and the book should prove interesting to the teacher of children's literature. Indeed, this collection of stories and others which may be made later from Mr. Shang's careful selection seem to be the most valuable part of his study.

Mr. Shang believes that in addition to the stories from Chinese folk-lore which he has made available to the American elementary schools, he has developed a technique for the selection of stories from other foreign countries, and that he has established a method for the evaluation of stories translated from foreign languages. These claims do not seem extravagant to me although scholars who are doing like work may object to using a technique developed wholly by one mind.

HELEN M. CAMPBELL
Miami University

SMITH, CHARLES A. *Some Relationships Existing in School Expenditures Among Florida Counties.* New York: Columbia University, 1929. viii + 54 pp.

Variation has been one of the outstanding features of the studies on school costs. Regardless of the type of expenditure or the type of school studied, the degree of variation is surprisingly great. This study is based on the assumption that a knowledge of the degree of variation among the different school units of a state would be valuable to those responsible for the determination of state educational policies. It attempts not only to determine the degree of variation in per-pupil expenditures for current expense in a selected state, but also to determine the relationships which indicate causes of this variation. The state selected for this study is Florida.

There are many factors which may determine the expenditures of a board of education. Certain of these factors may be controlled by the local board of education while others are beyond its control. The author calls the former internal

controls and the latter external controls. By statistical treatment of these various factors and expenditures, he determines the degree of importance of these factors from the standpoint of variation. White schools and negro schools are considered separately. For the white schools the more important internal factors are as follows:

1. Length of term.
2. Number of teachers in a school.
3. Amount paid per pupil for debt service.
4. The average amount paid for capital outlay.
5. In small classes or one-teacher schools—the size of class.

The less important of the internal factors are:

1. In large schools—the size of class.
2. Percent of pupils in a county who are transported.
3. Percent of indebtedness based on true wealth.

For the white schools the more important external factors are as follows:

1. Wealth.
   a. True value of taxable property.
   b. Index of wealth.
      (1) Business ratings of county.
   c. Ratio of adults to children.
2. Type of population.
   Percent of population coming from other than southern states.
3. Percent of economic power which is devoted to education.
4. Number of districts into which a county is divided.
5. Density of population.

The less important of the external factors are:

1. Urbanization.
2. Number of white pupils in average daily attendance within the county.
3. Type of population.
   a. Percent of incoming population from southern states.
   b. Percent of Negro population is of total population.

The author points out that the local board of education may control to a high degree these internal factors and thus control school expenditures. It is pointed out that the external factors may be controlled through some plan of state equalization.

The techniques developed by the author may be used in determining these same relationships among the units of other states.

W. W. CARPENTER
University of Missouri

GAST, IVA MORRIS, AND SKINNER, HARLEY CLAY. *Fundamentals of Educational Psychology.* New York: Benjamin H. Sanborn and Company, 1929. xiv + 354 pp.

This volume is not just another textbook added to the rapidly growing number in educational psychology, but in direct and lucid style it presents elementary facts and principles in educational psychology in an unusually comprehensive manner.

In the preface we are told by the authors that they felt the need of a text that would adhere to the following standards:

1. More detailed treatment of the major psychological problems as related to classroom practice.

2. Greater emphasis upon significant contributions of the many psychologists regardless of viewpoint, and less emphasis on particular viewpoints.

3. More attention given to the social and applied aspects of the subject, and less to material that is impractical and irrelevant.

4. A text written for teachers in service, and for students of education and

social and religious work, which will help them in attacking their problems more intelligently.

5. A frank expression of some opinion concerning certain topics that have been misinterpreted or overemphasized in certain quarters during recent years, e.g., intelligence tests, the significance of tests, endocrinology, heredity, and behavioristic psychology.

On the whole the careful reader will readily recognize the degree to which the authors succeeded in adhering to the standards as quoted. The discussion of such subjects as intelligence, heredity, man as a behaving organism, are based upon a careful evaluation of data. In general, the authors show good sense in their statements relative to debatable subjects. Only occasionally they seem to become mildly dogmatic. The following statements are illustrative:

"All mental traits are due to physical causes." "The mind must be regarded as a multitude of functions and not as a functional unit." These assertions had better been omitted.

The chapters "Childhood and Adolescence" and "Gifted Children," though replete with helpful suggestions for educators, seem extraneous to the general outline as represented by chapter titles. If a chapter on the gifted child must be included, why not chapters on the retarded child, the maladjusted child, etc.

An unusually attractive feature of the book is the splendid collection of photos of great educational psychologists and educators of our own day. The reader will be glad to see the faces of our men whom we read so much about and whose written work we welcome. William James and G. Stanley Hall, who may be called the founders of educational psychology as a science, are justly given the most prominent place. The book clearly indicates the influence of the idealistic philosophy of Dr. Herman Harrelt Horne, and though the authors recognize their indebtedness to him, his photograph is not among the illustrations. This seems an omission.

This comprehensive, clear organization of essential, fundamental facts and principles in educational psychology will be especially welcomed by those who seek a sane and practical exposition.

CORNELIUS R. JAARSMA
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Paterson, New Jersey

KRIEGER, LAURA B. M. *Prediction of Success in Professional Courses for Teachers.* New York: Teachers College, Columbia University, 1930. 77 pp.

In this dissertation, Dr. Krieger makes a contribution to the problem of the educational guidance of graduate students in a teacher-training institution. She examines statistically the scores of 840 such students at Teachers College, Columbia University, in the Thorndike General Examination given in October, 1927, and their average scholarship grades for winter and spring, 1927-28. Her purpose is to discover relationships existing and to make regression equations in order to illustrate how academic success (grades) may be predicted on the basis of achievement in the general examination.

The careful treatment of the data of the study is a contribution, by way of good illustration, to the problems of educational statistics having to do with prognosis by means of the technic of partial and multiple correlation and the regression equation. Each mathematical step in the processes is carefully reported, as well as the details of the derivation and use of McCall's T Scores.

The findings of relationship between

the two variables studied, the Thorndike test and scholarship grades of graduate students, show rather low correlations with probable resulting discrepancies in attempted prediction; and the conclusion is reached that more and more significant factors must be included in the group of independent variables if worth-while prognoses are to be expected. For example, the multiple R for the correlation between grades for the first semester and the separate parts of the general examination is .47, which does not promise a very high degree of reliability, and the regression coefficients for the sections of the general examination are .04, .11, .10, and .13, while for the test as a whole the coefficient is .37.

Rather striking differences are reported as found between candidates for the master's and the doctor's degrees. Mean achievement on the general examination was different; in the case of prospective masters the relationship between the two variables studied was closer and their distributions were wider, while only 5 percent of the doctor's group were below the average in both grades and general examination. The conclusion is that "A student below the mean in either general examination scores or grades has less than one chance in four of passing the matriculation examinations."

As to sex differences the author reports that the relationships beween the variables checked were "consistently higher for men than for women," but that the men's spread of reaction to the general examination was wider. The mean scholarship grades, however, were "practically equal for men and for women." Life age was found to have no relationship whatever to the factors studied.

"An interpretation of the results indicates some practical use that can be made of the method of study here presented and of the information thus made available. It is obvious that, except in the case of the students, very high or very low in the general examination score, differentiations cannot yet be accurately made. The students in the highest ten percent in the general examination score should be encouraged to do work of a superior order and be given advice concerning individual problems. Students low in the general examination score, other things being equal, should be advised against taking more than an average load and probably should also be discouraged from working for remuneration. It is necessary, however, that both students and advisers be aware of the fact that high scores on the general examination are probably more reliable than low scores. It would be reasonably safe to assume that a student in the upper group on the examination would, under ordinary circumstances, do satisfactory work, whereas the fact that an individual is low in the examination is not necessarily an indication that he will not do satisfactory work. Prospective candidates for the Doctor's degree should also be informed of their chances for success in the matriculation examinations on the basis of both general examination scores and grades."

FREDERICK L. WHITNEY
Colorado State Teachers College

RUBADO, CLARENCE ARTHUR. *Problems of the City School Superintendent in the Field of Arithmetic.* New York: Teachers College, Columbia University. 107 pp.

Doctor Rubado has tried to find what superintendents of schools need to know of arithmetic. A list of 106 problems was collected from previously completed investigations in the field and submitted to 54 superintendents in several states for

checking. The superintendents were also asked to suggest problems in the field of arithmetic which they had encountered in their work. The superintendents indicated whether they considered these problems "essential," "useful," or "of no value."

The result is rather interesting but not particularly illuminating. Items ranking high in the list are items which are probably already fairly well known to the superintendent who has had a variety of courses in education, including courses dealing with the teaching of the elementary school subjects, and who reads rather widely current educational literature.

An extensive bibliography supplies references on each of the 106 problems listed. The bibliography would be more useful perhaps if it included a smaller number of more carefully selected references and if they were annotated. It is often true that titles do not tell much about the contents of an article or a book.

Doctor Rubado's dissertation undoubtedly required the expenditure of considerable time and energy. In the opinion of the reviewer, however, it does not constitute a contribution of the kind that one still hopes to see submitted by the candidate for the doctorate.

Ohio University R. L. MORTON

HWANG, PU. *Errors and Improvement in Rating English Compositions by Means of a Composition Scale.* New York: Columbia University, 1930. 67 pp.

Although scales for rating English compositions and other pupil products have been in use for about two decades, few careful studies of the errors involved in ratings thereby have been made. The volume being reviewed makes a distinct contribution along this line. It reports an effort to ascertain the variable and systematic errors involved in rating English compositions under four sets of conditions: by objective scales versus subjective standards; with compositions on similar topics versus those on different topics; with compositions showing a wide range of quality versus those showing a narrow range; and on general merit versus special merits. The data reported were derived from ratings of eighty compositions by seventy-four English teachers, or persons preparing to be English teachers, none of whom had had previous training in using English Composition scales.

The chief conclusion is that the use of scales reduces systematic errors more markedly than variable errors, but that the errors of both sorts still remaining are relatively large. Among the other findings are that ratings by a general merit scale are more reliable than those by a special merit scale; that compositions on similar topics are easier to rate than those on different topics, and those covering a wide range of quality easier than those covering a narrow range; that errors of measurement due to judge's errors are larger than those due to variation in a pupil's writing ability.

Although the author states several limitations and bases most of his conclusions upon approved statistical and logical interpretations of his data, he appears to have overlooked one or two points. Since the judges employed the general merit scale after the special merit scale it is possible that the previous use of the latter contributed to the greater reliability of the results with the general merit scale. Furthermore, there appears to be no recognition of the fact that the difference between the reliability of ratings with the two scales may be due to the more careful construction and the resultant higher merit of the one scale than the other. It is stated that the

total time spent by each judge in rating eighty compositions three times averaged about six hours, or about one and one-half minutes to the composition. It seems to the reviewer that even experienced raters could not rate compositions of the average length of those employed in the study as rapidly as this and yet give them careful consideration. If this is true, the failure to do so might account for the fact that the increase in reliability, when scales were used, was smaller than many persons might expect.

In his report the author fails to make all his tables self-explanatory, and in some cases he fails to include sufficient discussion and interpretation of them in the text. Furthermore, in one case he makes a slight error in reporting another study along the same line. In referring to Hudelson's previous study, he states that each of the 157 teachers rated 157 compositions, but a careful reading of Hudelson's report of the study indicates that this was not true. It is also to be regretted that a few additional points were not better investigated, such, for example, as the effect of continued practice and instruction in the use of scales upon the reliability of ratings under different conditions. All in all, however, the author is to be complimented for his careful work and his valuable contribution to our knowledge about the effect of using scales.

University of Illinois C. W. ODELL

BRESLICH, ERNST R. *The Teaching of Mathematics in Secondary Schools.* Chicago: University of Chicago Press, 1930. vii + 239 pp.

Teachers of mathematics should welcome the appearance of the first volume of a series of books on the teaching of mathematics in secondary schools by Ernst R. Breslich. Dr. Breslich has been teaching mathematics at the University of Chicago High School for the last twenty-five years, has been head of the mathematics department of this experimental school since 1913, and has taught courses on the teaching of mathematics in the School of Education since 1915. His qualifications for writing a series of books on the teaching of mathematics would alone, without mention of the content, make the appearance of the first volume an interesting event to mathematics teachers.

This book is intended for the following groups of readers: 1. the prospective teacher, the college student who has decided to become a teacher of mathematics; 2. the experienced teacher who is looking for suggestions to help him improve his instruction; 3. the supervisor who wishes to recommend to his teachers such procedures as have been carefully tried out and refined through years of practice; and 4. normal-school instructors and instructors in summer schools who have in their classes prospective and experienced teachers.

Breslich contends that the "value of an effective teaching technique is greatly underrated." It is too often assumed that "Understanding insight, and mathematical power acquired in college courses in mathematics, supposedly develops automatically the power to understand and solve the problems arising in the lower schools. It is too often assumed that the inexperienced teacher merely has to choose as models of good teaching the procedures employed by his best college instructors." Too little do we realize that schools exist because of the activities of the class period, that these activities need to be planned with care and that those who teach in secondary schools need the guidance of general principles and techniques discovered by successful secondary school teachers.

In his first chapter Breslich discusses "The Class-Period Activities of the Teacher of Mathematics." He suggests a definite procedure with each unit of work, including: (1) exploration, (2) preview, (3) teaching, (4) making assignments, (5) supervised study, (6) practice, (7) reviewing, (8) organizing, (9) testing, and (10) reciting. In this procedure there are several novel suggestions, but especially enticing is the recitation following the test. It is contended that the purpose of a test is to discover whether or not a student has mastered a unit of work and if not wherein it needs reteaching. The recitation should be an opportunity for "the pupil to tell in his own way what he knows. . . . . It is evident that before he can recite he must know something to talk about." Breslich condemns the use of the recitation as a means of testing the mastery of an assignment.

While Chapter II supposedly presents "Effective Procedures and Devices in Teaching Mathematics," it is largely a discussion of the directed study technique used at the University of Chicago High School, and as such will be most interesting to those for whom the book is intended.

After a chapter on maintaining and arousing interest in mathematics through varied motivations, Breslich has a timely and interesting chapter on "Teaching Pupils How to Study."

His chapter on "Mathematical Equipment" makes one realize how poorly many classrooms are equipped to do the job of teaching mathematics.

The treatment of the "Unitary Organization of Instructional Materials" and "Testing to Improve Instruction," is a worthy exposition of a technique which has made the name Morrison an adjective with a most significant connotation.

According to Breslich the aims of teaching mathematics are very specific and are classified as the development of certain "powers," "appreciations," "understandings," "attitudes," "habits" and "skills." In a final chapter on curriculum trends there is presented a simple yet convincing defense for modern tendencies based largely on social needs, historical development of content, and psychological arrangement of materials. The following conclusions seem justified: "(1) Secondary schools continue to offer an abundance of experiences with arithmetic—placing emphasis on accuracy rather than on speed. (2) Some algebra should be taught previous to the time when algebra is studied as a science. (3) Some geometry should be taught in grades VII and VIII."

Upon a superficial reading of this treatise a reader would be tempted, regardless of its most excellent and interesting treatment of vital topics, to condemn the volume on the basis that it is all methods and no subject matter. The time is past when methods courses in teacher training institutions can be merely methods and nothing else. They must contain a generous provision for contact, from a professional point of view, with the actual subject matter to be presented. Were it not for the anticipated second volume on "the teaching of specific topics, processes, and materials, and on methods of selecting and organizing subject matter," we would classify this book as just another book on methods in spite of its many excellent features. But this is merely a first book serving as cocktail before the meat to whet our appetites for the still more significant volume to follow.

This review would indeed be inadequate if it closed without mentioning the unusually complete lists of references which

Dr. Breslich has compiled for all the varied aspects of the teaching of mathematics. These references alone are a very useful contribution to the teaching of mathematics.

H. C. CHRISTOFFERSON
Miami University

COX, PHILIP W. L. *The Junior High School and Its Curriculum.* New York: Charles Scribner's Sons, 1929. xxii + 474 pp.

This book undertakes to furnish "concrete guidance . . . in establishing truly pioneering adventures in the education of children at the beginning of adolescence." Its central idea is a core-curriculum common to all pupils, around which is built a "curriculum emergent," that is constantly developing and changing as the interests and needs of junior high-school children may demand. The author claims a consistent philosophy of democracy and education which will enable a junior high faculty to work out a "flexible purposive curriculum." He declares the outstanding requirement of the junior high-school organization to be ". . . that it respect the unique personality of each individual, that it use every means in its power to arouse the desire to know, to do, and to be, and that curriculum opportunities encourage him to be a contributor to social welfare and to express himself through media in which he will be most adequate. To the extent that the school can help the child to participate confidently in the total life of the school, the problem of knowledges and skills will care for itself."

Mr. Cox enumerates the following seven objectives of the core-curriculum and devotes a chapter to the discussion of each: Associational Living, Civic Attitudes, Wholesome Living, Language Arts, Scientific Interests and Related Mathematics, Appreciations, and Practical Arts. He enumerates and discusses at length the various unspecialized activities which he assumes will promote for all pupils the attainments of these objectives. These activities, many of them commonly considered extra curricular, he would have recognized as vital parts of the core-curriculum of the junior high school.

The second half of the book deals with such matters as individual deficiencies, remedial measures, elections, college entrance requirements, and administration of the curriculum,—problems all of which are discussed in an interesting manner and from a somewhat unusual viewpoint. His discussion of minimum essentials in the various subjects is particularly refreshing.

The book is well written and very readable. There are topical headings and a summary with each chapter. It is enriched by abundant footnotes and an ample bibliography arranged as to chapters. While to some the work may seem a bit Utopian, it is very thought-provoking, and full of helpful practical suggestions. It is a distinct contribution to the literature of the junior high school. To many of its readers it will bring a newer and bigger conception of this important agency in the education of our adolescent youth.

H. F. VALLANCE
Indianola Junior High School, Columbus, Ohio

HOUGH, THEODORE; SEDGEWICK, W. T.; AND WADDELL, J. A. *The Human Mechanism.* New York: Ginn and Company.

Better illustrations and an improved typography characterize this edition of an old favorite among textbooks in physiology and hygiene. Dr. Waddell's contribution is additionally observed in the

incorporation of those advances in these subjects and in public health which are directly applicable to the purposes of the text, and by changes made in the interest of greater simplicity and clearness of presentation. One could wish that many other texts would adopt the device of numbering the paragraphs as an aid in making accurate assignments to students. This text is excellent for those courses in physiology and hygiene which are given in the first year of a liberal arts college, while teachers' colleges desiring to give a content course in this field will find it superior for that purpose.

N. M. GRIER
Evansville College

MURCHISON, CARL. *Social Psychology.* Worcester: Clark University Press, 1929. xii + 210 pp.

This volume is the creation of one who brings to bear on the problem of social psychology a very unusual breadth of view, coupled with an equally unusual depth of insight.

The central thought of the volume is that any behavior of an individual has significance for social life only as the individual's behavior deviates from that of many others. To know that a person made a certain grade in, say, the Army Test, is to know nothing of any value concerning him; it becomes significant only as we know the individual's relative ranking. This is one of the major organizing thoughts constituting the foundation of Dr. Murchison's theory.

The literature in social psychology has been very largely the product of those who assumed that social psychology was a study either of social forces or of the social behavior of the individual. McDougall and Allport respectively represent these views. Because of this attitude social psychology has been largely a study of superficial after-effects rather than a study of those quantitative features which make social life inevitable.

Social life reaches its high degree of complications and complexity in man because the distribution of mental and physical characteristics is such that some individuals possess to a markedly greater degree than do others some capacities for behavior.

Too often, students of social psychology have concerned themselves with the study of the fugitive expressions of social life and have missed altogether the real subject matter of social psychology. In the matter of controlling the number of births we have had the practices of infanticide, abortion, contraception, and delayed marriage; the mode of practice varies but the thing itself abides; in the matter of controlling the labors of others men have developed the forms of slavery, peonage, employment, and communism; here again the mode of practice varies but the thing itself abides. In the province of international relations have been developed a sequence of behavior patterns varying all the way from blood-revenge to world organization, the last a technique which assures that any war will hereafter be a world war. In this province also we see that the array of behavior patterns ceaselessly varies, but still again the thing itself (the social) abides.

Dr. Murchison struggles to make social psychology something more than merely a study of the shifting after effects of social life and, in the opinion of the reviewer, strikes Herculean blows at present day superficial forms of psychologizing tendencies.

Part III of this volume is, I believe, a real treasure house. In a few pages the central insights of the classic theories of social organization are sketched and sketched in such a way as to make each view reveal its inner self. The views of

Plato, of early and later Christianity, of Machiavelli, Hobbes, Locke, Rousseau, Marx, Herbart, Spencer, Bodin, Montesquiu, and others are presented with much charm and definiteness of outline and such simplicity of diction that he who runs may read and also understand.

Under all the varied patterns of social behavior the same facts of life prevail; fugitiveness marks the pattern of life behavior, constancy marks the ceaseless swing of the strong arm that is the life of the social process.

Part IV is entitled, "Some Persistent Hypotheses of Social Psychology." These hypotheses are four in number. One of them asserts that social psychology is a study of the Individual—another that the subject matter of social psychology is the group—still another postulates a body of instincts, while the fourth theory lays it down that social psychology is a study of Social Forces.

Dr. Murchison concludes that the four theories are equally inapplicable. One regrets the great brevity of treatment here.

"The Nature of Social Behavior" is the title of the final part of the volume. In the great body of literature dealing with problems of social psychology the assumption is made that all forms of social behavior are unique and are easily recognized and that they are quite similar in all individuals. Dr. Murchison concludes that the forms of social behavior are not thus unique and easily recognized but that they are infinite variety depending for their characteristics on the variable traits of both individuals and of communities.

The task of the social psychologist is not to look for some simple teleological method of explanation but to seek out the measurable factors of individuals and communities.

ROBERT D. WILLIAMS
Ohio State University

RESEARCH ABSTRACTS and BIBLIOGRAPHIES

Address all communications relative to research abstracts and bibliographies to Editor A. S. Barr, University of Wisconsin, Madison, Wisconsin.

BULLETINS

FOSTER, FRANK KALE. *Status of the Junior High-School Principal,* United States Department of the Interior, Bulletin No. 18, 1930.

This bulletin presents certain personal facts concerning junior high-school principals, their academic and professional preparation, educational experience and salaries, with a discussion of the junior high-school principal as an administrator and supervisor, and his relations to the community.

HECK, ARCH O. "Education of Crippled Children," *United States Department of the Interior Bulletin* No. 11. Washington: United States Government Printing Office, 1930. 57 pp.

A summary of the present status and facilities for the education of crippled children.

KINDER, J. S., AND ODELL, CHARLES W. "Educational Tests for Use in Institutions of Higher Learning," *University of Illinois Bulletin,* XXVII (August 5, 1930), 95 pp.

This bulletin contains a descriptive list of achievement tests for each of the subjects ordinarily taught in institutions of higher learning, with a selected and annotated bibliography.

LITHERLAND, HERSCHEL. "A Study of the Nature and Scope of 'Principles of Secondary Education,'" Abstract of Doctor's Dissertation, *University of Cincinnati, College of Education,* June, 1930. 23 pp.

An abstract of a doctor's dissertation summarizing the aims, purposes, and content of courses in the principles of secondary education.

RYAN, MICHAEL J. *A Bibliography on Handwriting.* Philadelphia, Pennsylvania: Peirce School of Business Administration, January, 1930.

A twenty-three page list of educational titles dealing with the subject of handwriting.

WESSEL, HERMAN M. *The Secondary School Population in Some of Its Social and Economic Relationships.* Doctor's Thesis, School of Education, University of Pennsylvania, Philadelphia, 1930.

A study of the school characteristics of student population, the home background, activities outside of school, status in school, plans for the future, and other factors.

WOODY, CLIFFORD, AND BERGMAN, W. G. *Achievement and Interest of High-School Seniors in Michigan,* Bureau of Educational Reference and Research, Bulletin No. 135. Ann Arbor, Michigan: School of Education, University of Michigan, August 30, 1930

The authors present material on the intercorrelations between interest, ability, and achievement; the relation of the high-school course selected by the student to his ability and achievement; the relation of the personal ability, achievement, special training, occupational intentions of the pupil, and the economic status of the father, to the choice of a college, and ultimately to the choice of a life work.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

BAIN, WINIFRED E. "Service Studies as A Technique in Guiding Students to Analyze Teaching," *Teachers College Record*, XXXII (November, 1930), 147-163.

A descriptive article dealing with objective methods of recording and analyzing teaching procedures basic to the principles and standards underlying good teaching.

COCKING, WALTER D. "The Stenographic Report as a Supervisory Instrument," *Peabody Journal of Education*, VIII (November, 1930), 131-139.

An experimental study of the use of stenographic reports as a supervisory device, from which the author concludes that the device is an effective one.

"Current Issues in Teacher Retirement," *Research Bulletin of the National Education Association*, VIII (November, 1930), 224-277.

A discussion of the general nature of the retirement system, fundamental principles, state and local retirement systems, teacher retirement legislation, studies of retirement systems, a retirement plan for staffs of state education associations, teacher retirement issues in theory and practice, with a selected bibliography.

HOLLINGSWORTH, MARY R., LACEY, JOY M., AND SHANNON, J. R. "School Subjects which Elementary School Teachers Find Most Difficult and Those which they Find Easiest to Teach," *Educational Method*, X (November, 1930), 75-83.

A questionnaire study based upon 569 returns from some 25 elementary school systems in the state of Indiana. Language and composition, phonics, nature study, and citizenship appear most difficult for primary teachers, while geography, history and civics, and language and composition appear most difficult for the intermediate grade teachers.

SHREVE, FRANCIS. "Scholarship as a Factor in Teaching," *Peabody Journal of Education*, VIII (November, 1930), 144-148.

A summary of investigations dealing with the relation of certain factors to teaching success.

EXPERIMENTAL STUDIES OF LEARNING AND TEACHING

BRUCE, WILLIAM F. "Habits, Intelligence, and Analysis," *Journal of Educational Psychology*, XXI (November, 1930), 574-585.

A suggestive technical discussion of the interrelationship between intelligence and habits.

GUILER, WALTER SCRIBNER. "Improving Ability in Capitalization," *Elementary School Journal*, XXXI (November, 1930), 216-222.

The author presents the results of an improvement program with sixth grade pupils in the Fairfield Township Centralized School, Butler County, Ohio.

JOHN, LENORE. "Difficulties in Solving Problems in Arithmetic," *Elementary School Journal*, XXXI (November, 1930), 202-215.

An analysis of the problem solving difficulties of pupils in fourth, fifth, and sixth grade arithmetic. The author presents an index of the most frequently occurring types of errors in arithmetic.

MCCALLISTER, JAMES M. "Reading Difficulties in Studying Content Subjects," *Elementary School Journal*, XXXI (November, 1930), 191-201.

An analysis of the reading difficulties involved in the study of American history, mathematics, and general science, in grades seven and eight of the Laboratory Schools of the University of Chicago during the school years 1926-27 and 1927-28. The author points out numerous specific reading difficulties and concludes that there is need for giving special attention to the reading of content subjects.

OJEMANN, R. H. "Studies in Handedness: I. A Technique for Testing Unimanual Handedness," *Journal of Educational Psychology*, XXI (November, 1930), 597-611.

The first of a series of three articles dealing with the effects produced upon the special function by training left-handed individuals to write with the right hand.

OVERMAN, J. R. "An Experimental Study of the Effect of the Method of Instruction on Transfer of Training in Arithmetic," *Elementary School Journal*, XXXI (November, 1930), 183-190.

An experimental study carried on in 52 second-grade classes in Toledo, Findlay, and Bowling Green, Ohio, during the school years 1927-28 and 1928-29, from which the author concludes that the effect of instruction and practice given in certain specific types of examples was not confined to those types but spread to related types.

SHELTON, ARTHUR L. "An Experimental Study of the Daily Recitation versus the Unit Plan," *School Review*, XXXVIII (November, 1930), 694-699.

An experimental study of the daily recitation versus the unit plan carried out with four classes in general science in the Queen Anne High School, Seattle, Washington, from which the author concludes that neither the unit method nor the daily-recitation method is distinctly superior to the other in teaching general science.

CURRICULUM RESEARCH

DOUGLASS, HARL R. "Types and Fields of Curriculum Research in Secondary Education during 1929," *School Review*, XXXVIII (November, 1930), 656-662.

A questionnaire and statistical study of current tendencies in curriculum research.

TERRY, PAUL W. "Summary of Investigations of Extra-Curriculum Activities in 1929. II," *School Review*, XXXVIII (November, 1930), 663-672.

A summary of investigations pertaining to extra-curricular activities in 1929, organized with reference to general techniques of evaluation, evaluation of extra-curricular activities, administrative problems, problems relating to athletics, and miscellaneous student organizations.

TESTS AND MEASUREMENTS

CROCKETT, ALEXANDER C. "A Measure of Manual Ability," *Journal of Ap-*

plied Psychology, XIV (October, 1930), 414-426.

A study of the validity and reliability of a task designed to measure manual ability. The author concludes that there seems to be a general factor, or distinct trait, such as manual ability, and that this ability can be measured with fair validity and reliability.

EELLS, W. C. "The California Junior College Mental-Educational Survey," *Educational Record*, XI (October, 1930), 281-291.

A statistical analysis of the results secured from a mental educational survey of over eleven thousand students in forty-seven California junior colleges in which Thurstone's 1928 edition of his Psychological Examination for High-School Graduates and College Freshmen and the Iowa High-School Content Examination, Form B, were used.

HOLY, T. C. "Achievement in Grammar," *Educational Research Bulletin*, Ohio State University, IX (October 8, 1930), 394-398.

A comparison of achievement scores in grammar in city, exempted-village, and county school districts in the state of Ohio. It was found that the achievement of pupils in village, consolidated, and centralized schools is superior to the achievement of those coming from one-room schools.

MCCARTHY, DOROTHEA. "A Study of the Seashore Measures of Musical Talent," *Journal of Applied Psychology*, XIV (October, 1930), 437-455.

A study of the validity and reliability of the Seashore tests of musical talent from which the author concludes that there are marked age differences in performance on the Seashore tests which may mean either that the tests measure intelligence in addition to musical talent, or that musical capacity as measured by these tests improves with advance in age, at least, until maturity. The author finds the validity and reliability for the different parts of the test to be of an equal value, and that the test is generally usable at the extremes.

WEINLAND, JAMES D. "An Objective Method for the Measurement of Attitudes," *Journal of Applied Psychology*, XIV (October, 1930), 427-436.

A descriptive article outlining an objective method for the measurement of attitudes.

STATISTICS

SYMONDS, PERCIVAL M. "A Comparison of Statistical Measures of Overlapping with Charts for Estimating the Value of Bi-serial *r*," *Journal of Educational Psychology*, XXI (November, 1930), 586-596.

A technical discussion of the statistical means of comparing the overlapping of groups, from which the author concludes that there should be greater use made of bi-serial *r*.

MISCELLANEOUS

PUNKE, HAROLD H. "Recent Developments in German Secondary Education. II," *School Review*, XXXVIII (November, 1930), 680-693.

Part II of a descriptive article dealing with developments in secondary education.

RESEARCH NEWS and COMMUNICATIONS

Address all research news and communications to Editor Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

Commonwealth Fund Studies. — The Committee on Administrative Units of the Commonwealth Fund promoted sixteen investigations before appropriations were discontinued in 1927. The eleven completed and published studies are as follows:

W. S. Gray and Others, *Remedial Cases in Reading: Their Diagnosis and Treatment*, University of Chicago, 1922.

Leonard V. Koos, *The Junior College*, University of Minnesota, 1924.

J. M. Glass, *Curriculum Practices in the Junior High School and Grades Five and Six*, University of Chicago, 1924.

W. S. Gray, *Summary of Investigations Relating to Reading*, University of Chicago, 1925.

F. J. Kelly, *The American Arts College*, Macmillan, 1925.

George S. Counts, *The Senior High School Curriculum*, University of Chicago, 1926.

Report of the Commission on Length of Elementary Education, University of Chicago, 1927.

C. H. Judd, *Psychological Analysis of the Fundamentals of Arithmetic*, University of Chicago, 1927.

W. W. Charters and Others, *Basic Material for a Pharmaceutical Curriculum*, McGraw-Hill, 1927.

W. J. Osburn, *Overlappings and Omissions in Our Courses of Study*, Public School Publishing Co., 1928.

W. W. Charters and Douglas Waples, *The Commonwealth Teacher-Training Study*, University of Chicago, 1929.

Changes in the Chicago Journals.—The two journals published by the Department of Education of the University of Chicago have, for a number of years, been conducted under the editorial management of a Board of Editors drawn from the faculties of the School of Education. With the beginning of the academic year 1930-31 a new arrangement went into effect. The editorial management of the *School Review* was assumed by Professor L. V. Koos and the editorial management of the *Elementary School Journal* by Professor I. N. Edwards. These changes in editorial management of the journals will not result in a modification of editorial policy but will bring to the two journals the more active service of two members of the Department of Education who are especially qualified to present the results of scientific studies in the fields covered by the journals.

Journal of Business Education.—The *Journal of Business Education*, edited by Paul S. Lomax of New York University, is, as reorganized, intended to be of professional value to business teachers, supervisors, and administrators in secondary schools, colleges, and universities. It features articles on organization, administration, teaching, supervision, and testing of business education; reviews of important books in education, business, and business education; and reports of current conventions of various organizations of business educators.

Survey of Business Education.—A comprehensive study of the existing needs and practices of university education for business in the United States, made by Professors James H. S. Bossard and J. Frederic Dewhurst for the Wharton School of Finance and Commerce of the University of Pennsylvania, is now nearing completion.

The study combines two approaches to the field of collegiate education for business. One part deals with a survey of the needs of business, as expressed through an analysis of the changing character of American business, the occupational opportunities for college graduates in business, the training and qualifications for positions in business, and the reading interests of business men. Of particular interest in this connection, as a part of the investigation, is a study of some two thousand graduates of the Wharton School, in which data are presented on the occupational preferences of these persons as undergraduates, their undergraduate employment and campus activities, the occupational experience of graduates, and the opinions of graduates concerning their college training. The second main division of the report deals with an analysis and appraisal of existing forms of higher education for business. Topics included are the historical and statistical development of collegiate education for business, organization and objectives of the various schools, organization of business curriculums, certain general studies found in the business curriculums, business studies, problems of faculty and student personnel, and teaching methods and problems.

Dr. Bossard is professor of Sociology and Dr. Dewhurst, until recently, professor of Industry, at the University of Pennsylvania.

The results of the survey are to be published in book form by the University of Pennsylvania Press, and should appear before the end of 1930.

Wisconsin Commercial Survey.—In the spring of 1930 the Whitewater State Teachers College conducted a State Wide Commercial Education Survey to determine the accomplishment, to improve instruction, and to establish higher standards in junior and senior shorthand, bookkeeping, arithmetic, and penmanship. The tests were constructed by the faculty of the Whitewater State Teachers College, and given by the individual schools. Approximately 75 percent of all of the high schools offering commercial work took part in the survey. More than 30,000 tests were used.

A printed report of the results is to be ready for distribution about December 15.

Methodist School Survey.—A survey of 102 institutions affiliated with the Methodist Episcopal church is being conducted by F. W. Reeves and John D. Russell. Other members of the staff for the secondary schools are: Maurice Seay of Union College, and W. Carson Ryan of Swarthmore College; for the colleges, A. J. Brumbaugh of the University of Chicago, Hugh Gregg, formerly of Albion College, and L. E. Blauch of North Carolina College for Women, and for the Syracuse University are George A. Works of the University of Chicago and Raymond A. Kent of the University of Louisville. Special investigators for the surveys are Charles E. Reeves of Elmira College, W. W. Charters of Ohio State University, Jordan Cavan of Rockford College, and W. M. Randall of the University of Chicago. The schools included in this survey are of six distinct types: universities; theological seminaries; four-year colleges; secondary schools, including southern mountain

schools, eastern preparatory schools, and a few junior colleges; training schools for religious workers; and institutions for negro students. Surveys of twenty-nine secondary schools, sixteen colleges, and Syracuse University were completed during the year, 1930.

Library School Survey.—As an outgrowth of recommendations made by the Policy Committee of the Southeastern Library Association (December, 1929), a survey of the library-school situation in thirteen southern states was begun March 10, under the direction of Sarah C. N. Bogle, executive secretary of the A. L. A. Board of Education for Librarianship, and assisted by Tommie Dora Barker, librarian and director of the Library School of the Carnegie Library at Atlanta. The need for such a survey was brought out by the establishment, in 1927, of standards for southern high-school libraries by the Association of Colleges and Secondary Schools of the Southern States.

The new standards to go into effect in 1930 in more than 900 high schools accredited by the southern association stipulate certain requirements covering: the type of librarian employed by the school, the physical equipment of the library, the selection of books, annual maintenance, and library courses.

The states in which the survey was made are: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. The survey is financed by the Carnegie Corporation of New York.

School Building Surveys.—A mimeographed report of the survey committee on Brown University, issued in September, 1930, has been received. The survey committee consisted of S. P. Capen, L. P. Eisenhart, and G. S. Ford.

Members of the school staff of Richmond, Indiana, with the advice of George D. Strayer and N. L. Engelhardt of Teachers College, have completed a school-building survey and building-program investigation for the city of Richmond. The results are reported in a bulletin of eighty-six pages.

George D. Strayer and N. L. Engelhardt of Teachers College with the assistance of four graduate students, have outlined a school-building program for the city of Utica, New York, in a bulletin of sixty-eight pages.

Science Yearbook Committee.—Problems of science teaching are being studied by a yearbook committee of the National Society for the Study of Education. The personnel of the committee is as follows:

R. K. Watkins, University of Missouri.
C. J. Pieper, New York University.
E. R. Downing, University of Chicago.
G. S. Craig, Teachers College, Columbia University.
F. D. Curtis, Vice-Chairman, University of Michigan.
S. R. Powers, Chairman, Teachers College, Columbia University.

The Committee has set for itself the problem of interpreting the research studies in the field of science in light of the needs of the program of science teaching in elementary and secondary schools, teacher training institutions, colleges and universities. The report will be issued in February, 1932.

Geography Yearbook.—A committee of the National Society for the Study of Education is at work on a yearbook on the Teaching of Geography, to be published at some future date. The sub-

committees' reports are due August 1, 1931. Part I includes a treatment of geography in terms of: the distinctive contributions of geography, an analysis of textbooks from 1800 to 1900, standards for evaluating geography instruction, curriculums, principles of teaching, testing, teacher-training, and bibliographies.

Part II is devoted to reports of investigations, as follows: teaching a large unit, radio broadcasting, drill devices, adult uses, children's uses, teaching methods in attacking exercises, instructional difficulties, content of fused courses, supervised study, map and picture instruction, equipment at the various levels of instruction, visual-instruction museums, value of literature and history, value in reading current magazine articles, knowledge possessed at different levels, pupil interests, errors in map studies, vocabulary, analysis of courses of study, etc.

About ninety teachers of geography are coöperating in the preparation of this yearbook. The members of the committee are as follows:

Edith Parker, University of Chicago, in charge of abstracts of investigations completed.

Robert Brown, College of Education, Providence, Rhode Island, in charge of work in New England.

De Forest Stull, Teachers College, Columbia University, Middle Atlantic States.

Douglas Ridgley, Clark University, Worcester, Massachusetts, North Central States, East of Mississippi River.

E. E. Lackey, University of Nebraska, Lincoln, Nebraska, the Western States and the North Central States West of the Mississippi River.

A. E. Parkins, Chairman, Peabody College, Nashville, Tennessee, Southern States and group conferences.

Chicago Principals' Yearbook.—The fifth yearbook of the Chicago Principals' Club, issued in the summer of 1930, deals with problems of health education. The previous yearbooks in order of their appearance dealt respectively with what individual principals were doing in meeting the problem of school failure; supervision, administration, and classification of fourth-grade reading materials; four especially planned investigations; and educational measurement as a guide to the principal in using, to best advantage, available measuring devices.

Yearbook of Social Work.—The Russell Sage Foundation has published the first yearbook of social work to be issued in the United States. The yearbook is an impressive commentary on the growth of organized welfare activities in America. It contains 187 separate articles, covering not only the better known fields of social work such as family-welfare societies, community chests, juvenile courts and probation, immigrants, mental hygiene, child labor, and social settlements, but a number of related topics such as adult education, fraternal orders, household employment, and industrial insurance. A comprehensive descriptive roster of the national agencies, public and private, operating in the social field, which reach the total of 455 in what is declared to be the largest and most complete list of its sort ever issued, is contained in the second part of this Yearbook.

Publication of the work was undertaken according to a statement made by the editor, Dr. Fred S. Hall, "in the belief that the progress of social work will be advanced thereby, its unity increased and popular understanding of its aims enlarged."

Commission on Supervision.—A National Commission for the Reorganization of Supervision composed of four representatives from each of the following departments of the N.E.A.: Superintendents, Supervisors and Directors of Instruction, Elementary School Principals, and Classroom Teachers has been organized to prepare a report on the "Cardinal Principles of Supervision."

With the coöperation of the Research Division of the National Education Association, an investigation of the words "supervision" and "supervisor," as reflected in the annual Proceedings of the N. E. A., has been brought nearly to completion. This work has been directed by a sub-committee composed as follows: Superintendent T. W. Gosling of Akron, Ohio, chairman; Dr. Margaret Alltucker Norton, assistant director, Research Division, N. E. A., and Dr. J. Cayce Morrison, Assistant Commissioner for Elementary Education, New York State Education Department.

A second committee, under the chairmanship of Dr. W. H. Burton of the University of Chicago, is commissioned to compile a series of proposals to be submitted to representative students of supervision through the country.

The officers of the Commission are:

President, James F. Hosic, Secretary-Treasurer of the Department of Supervisors and Directors of Instruction.

Vice-President, Albert S. Cook, Superintendent of Public Instruction, Maryland.

Secretary, Arthur S. Gist, President of Humboldt State Teachers College, Arcata, California.

The next meeting of the Commission will be held at Detroit on February 26, 1931.

Department of Visual Instruction.—The Department of Visual Instruction of the National Education Association in 1928 appointed a committee on research and guidance to make a survey of the status of visual instruction in the public schools and other educational institutions, and to set up definite standards and objectives for further study in the field of visual instruction. Daniel C. Knowlton, Fieldston School, New York City, was made chairman of this committee which coöperates with the Research Division of the N. E. A. Other problems of interest in the field of visual education are: teacher training, cost analysis, standard equipment, selection of visual materials, organization of courses of study, and supervision.

Ohio Research Association.—W. W. Charters, president of the Research Division of the Ohio Education Association, called, on October 4, a meeting of the members of the Division and other persons engaged in educational research throughout Ohio to discuss the possibility of arranging a program of coöperative research to be sponsored by the Research Division and to be carried on by the members and other persons interested.

A group, called the Committee on Coöperative Research Activities of the Research Division, was appointed with membership as follows:

R. L. Morton, Ohio University, Chairman.

W. J. Osburn, State Department of Education.

E. C. Grover, Assistant Superintendent of Schools, Cleveland Heights.

A. W. Elliott, Superintendent of Schools, Mt. Vernon.

A. R. Mead, Department of Education, Ohio Wesleyan.

The duties of the Committee were stipulated as follows: to prepare a program of coöperative research and arrange the preliminary procedure which will be discussed at the December meeting of the Research Division; to set up the specifications for these research projects; to endeavor to coördinate all the research agencies in the State; and to call special meetings to discuss the work as it progresses.

Research in Scotland.—The Scottish Council for Research in Education, instituted in June, 1928, has issued its second annual report. It has representatives from various Scottish professional groups. Headquarters are at 47 Moray Place, Edinburgh. The general aim of the Council is to encourage and recognize research work in education in Scotland. The Council acting through its Executive Committee has as its special aims:

1. To initiate and control special investigations, making the necessary arrangements with the relative Education Committee.
2. To receive suggestions for research.
3. To allocate problems to suitable investigators.
4. Wholly or partly to finance approved investigations.
5. To authorize the publication of results and recommendations, and to bear the cost (wholly or partly) of such publication.

Child Research.—The Board of Governors of Mooseheart, established by the Loyal Order of Moose for orphaned children of its members, announces the establishment of a new Department of Child Research. Dr. Martin L. Reymert, formerly head of the Department of Psychology at Wittenberg College, has been appointed Director of Child Research, and is now establishing a laboratory at Mooseheart devoted to all phases of child research. It is expected that the new laboratory will become a center of research on the growth and training of normal children, and that its program will be developed in coöperation with other important child research centers.

City-School Research.—As an outcome of the Conference on Coöperative Research, held at Atlantic City, New Jersey, February 27, 1930, the Office of Education is planning to issue from time to time lists of research studies in education undertaken by city-school systems, in order that city superintendents throughout the country may be kept informed concerning projects which are being carried on by city-school research bureaus. This service will be in addition to the annual printed bibliography containing a list of studies in education undertaken by all research agencies, including city bureaus. It is hoped in this way that it will be possible to get the information concerning city schools into the hands of those interested much more promptly than would otherwise be possible.

Circular No. 18, August, 1930, is the first of the series to be issued and contains three lists: the first, giving information concerning 373 completed studies; the second, listing 209 studies now in progress; and the third, listing studies contemplated for the school year 1930-1931. The list of completed studies covers the period from July, 1929, to August, 1930. One hundred and one cities are represented in the three lists.

Louisville Bureau of Research.—Catherine L. Morat reports a study of permanent withdrawals from the J. M. Ather-

ton High School for girls covering a six-year period and involving 1,059 withdrawals. The results show that 29.5 percent of all withdrawals had failed in one or more subjects. The known causes for withdrawals include: removal from the city, 15 percent; transfers to other schools, 48.5 percent; and employment, 11.7 percent.

Under the direction of E. C. Blom of the Louisville Bureau of Research, a study of teachers' salaries in relation to teachers' ratings in Louisville was made. The results show that a large number of teachers receive salaries higher than should be the case, if the single salary schedule were strictly followed. The median salaries for all groups of Louisville teachers are considerably lower than for other comparable cities in the United States.

Minneapolis Safety Education.—An interesting outline of teaching materials and suggestions for safety education in Minneapolis, Grades I-VI, deals with the problem from the following angles: objectives, materials, suggested activities, illustrative procedures, songs and verse on safety, a new-type test, and a general bibliography. The appendix includes significant data on causes and prevention of fires, compiled by the fire department, on playground injuries, and on accidents.

Raleigh Publications. — The Raleigh (North Carolina) Elementary Education Council has issued a first yearbook of 189 mimeographed pages on reading. The materials were prepared by teachers in a year's study of the reading program in elementary schools, and are arranged by grades in the yearbook. Numerous bibliographies are included. Bulletin No. 2, 1930, is a statement of classroom work in elementary science in the Raleigh schools, covering ninety-two pages. Bulletin No. 3, 1930, uses sixty-eight pages in an account of materials for teaching elementary science and nature study as found in the environment of Raleigh schools. Bulletin No. 4, 1930, devotes ninety-six pages to a description of creative work in literature, language, music, and physical education.

Philadelphia Division of Educational Research.—Recent studies in the Philadelphia schools have been concerned with construction or administration of standard tests of mental ability, geography, writing, comprehension and rate in silent reading, history, arithmetic, and English; with subject-promotion rates in junior and senior high schools; and with an experiment in the study type of reading.

Testing in the Philippines.—Recent testing surveys have been sponsored by the Philippine Bureau of Education. These testing programs have been concerned with the measurement of achievement: of rural-vocational schools in arithmetic, reading, language, and dictation and composition; in general science; and in food selection and diet. The results are available in the 1930 issues of the *Philippine Public Schools.*

The thirtieth annual report of the Director of Education in the Philippines for the calendar year, 1929, deals with the extension of educational opportunity, progress in vocational education, educational measurements and research, improvement of instruction, professional training of teachers, publications, health and physical education, buildings and equipment, and school costs. The recommendations read much like superintendents' annual reports in the United States:

increase in school revenue, creation of a provincial school fund, better salaries for better-qualified teachers, increase in travel allowances, additional insular positions, increased appropriation for clerical personnel, and extension of schools to accommodate all children of elementary-school age.

Psychology Meetings.—Section I (Psychology) of the American Association for the Advancement of Science will hold its sessions on Friday, January 2, in Cleveland. Professor Madison Bentley of Cornell University, the retiring vice-president of the section, will give the vice-presidential address at the afternoon session on January 2 on the topic of "Psychology's Family Relations Among the Sciences." The meeting of Section I has been set for January 2 so as not to interfere with the programs of the American Psychological Association on December 29-31 at Iowa City. It is possible for persons who wish to attend both meetings to reach Cleveland in time for the programs of Section I.

Institutional Publications.—October 1, 1929, F. B. O'Rear and D. P. Cottrell of Teachers College, Columbia University, requested information concerning the publications in education of 892 departments and schools of education, covering the fifteen years preceding. Returns were received from 515 institutions, which represent 57.7 percent of the total number addressed. Of the institutions replying, 398 reported no institutional publications during the fifteen-year period, 104 sent material, and thirteen reported that they were unable to furnish the data at the time requested. The resulting mimeographed bibliography includes 1,437 items.

In preparing the list, the following types of material were excluded: (a) mimeographed or typed documents, (b) magazine articles, (c) textbooks, (d) announcements of courses, (e) annual reports of officers, (f) directories of students, (g) books of views, (h) student handbooks or annuals, and (i) material published by any of the commercial publishing houses. In those cases where the institution itself maintains a publications bureau or press, the material has been included. Syllabi, teachers' handbooks, manuals, and courses of study were included. Only one reference is made to any series of proceedings of regular meetings of associations. In general, it has been the purpose to include all institutional publications in the field of education of types other than those specifically excluded above.

Illiteracy Statistics.—Delaware, first state in the Union to have its illiteracy figures announced by the Federal Census Bureau, shows a decrease of almost 33⅓ percent in illiteracy over the figures for 1920. The 1930 census for Delaware indicates that there are 7,805 illiterates, the majority of these being in Wilmington. There are 1,896 native white illiterates, 2,392 foreign born, and 3,496 negroes.

It is pointed out by the National Advisory Committee on Illiteracy, of which Ray Lyman Wilbur, Secretary of the Interior, is chairman, that if all of the states have made a showing equal to Delaware, it means that over a million and a half of the five million illiterates in the United States have been taught to read and write, and that illiteracy in this country has been reduced from 6 percent to about 4 percent.

Office of Education Statistics.—Circulars Nos. 19 and 20, September, 1930, of the United States Office of Education provide interesting information respectively concerning the professions of medicine and journalism. A list of approved medical schools and information on student costs are given. During 1929-30 a total of 20,642 men and 955 women were registered in medical schools.

In 1929 there were 6,289 students of journalism enrolled in the schools of this country. Journalism is the business of managing, editing, or writing for newspapers, magazines, trade journals, and similar publications. Newspapers and periodicals classified by Ayer include: Daily newspapers, Sunday weeklies, newspaper-feature syndicates, agricultural publications, collegiate publications, foreign-language publications, fraternal organizations, magazines of general circulation, merchandise outlets, religious publications, and trade, technical, and class publications. Among these 20,724 publications, 2,299 are published daily, 12,825 weekly, and 2,804 monthly. The aggregate circulation of all daily papers is estimated at over 44 million copies. Editors and reporters listed in the 1920 census numbered 28,467 men and 5,730 Women. Newspapers demand vocationally trained men and women who combine technical skill with broad scholarship.

The Statistical Summary of Education, 1927-1928, Bulletin No. 3, 1930, of the United States Office of Education includes interesting educational data. Selected grand totals of various types are as follows: school enrollment, 29,410,615; cost of education, $3,033,706,590; teachers, 1,010,232, composed of about 20 percent men and 80 percent women; summer-session enrollment, 383,855; textbook costs, $49,097,466; and value of school property, $9,159,100,000, including $1,247,660,000 in endowments and productive funds.

Directory of Phi Delta Kappa.—Paul M. Cook, executive secretary of Phi Delta Kappa, professional education fraternity, is preparing a directory of members of the organization. Since this professional group includes some 12,000 men who provide much of the educational leadership of the country in terms of research, service, and leadership, the directory will be of interest to all teachers and workers in education. There will be four major divisions of the directory when completed and a total of approximately 450 pages. The divisions will be: historical and informational, an alphabetical list of all members, a geographical list of members whose addresses are available, and an advertiser's directory and advertising.

Intelligence and Academic Success.—F. L. Whitney reports in a mimeographed bulletin a study of the relationship between intelligence and mortality and scholastic ratings at Colorado State Teachers College. The results are as follows:

1. The central tendency of intelligence remains practically the same for the sophomore group, after having increased 4.56 points from freshman to second-year level.

2. On the contrary, the central tendency of scholarship shows a steady rise year by year from freshman, through sophomore, to junior levels (3.05, 3.21, 3.43).

3. Although there is much displacement, high and low intelligence seems to predict like levels of scholastic attain-

ment; but the classification test is a better tool for prognosis.

4. Among the three variables dealt with, intelligence and high scholastic achievement (the classification test) are most closely correlated; and intelligence and high-school marks are related to college success on about the same level.

5. Student mortality was most severe at the close of the sophomore year.

H. E. Schrammel and D. R. Wood of Kansas State Teachers College at Emporia report a study of the academic success of college students in relation to entrance-test rank. The study includes all students entering the Kansas State Teachers College between 1923 and 1929. The results are to appear as a bulletin of the college in December, 1930.